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Le Griffon d'Erez et le sens mythologique de Némésis*

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En labourant la terre, les membres du Qibboutz Erez ont découvert en octobre 1957 une statue en marbre blanc, légèrement jaunâtre, représentant un griffon qui pose une patte sur une roue (Pl. 25 A, B). Le Qibboutz en a fait don au Musée du Département des Antiquités, où la statue est actuellement exposée.

Le site de la découverte est à mi-chemin environ entre Gaza et Ascalon. Ce n'est pas le premier griffon qu'on ait trouvé dans la région; Clermont-Ganneau rapporte en avoir vu un[1] au domicile d'un certain S'limân Zarîf. C'est un griffon aptère (d'après le croquis publié par l'auteur), en marbre blanc, avec des veines verdâtres, mesurant 58 cm. de hauteur. Il repose sur ses pattes de derrière; les deux autres sont cassées, mais elles étaient probablement projetées en l'air et l'une d'elles reposait peut-être sur une roue, quoiqu'il soit difficile de s'en représenter l'image. Le griffon est femelle, et sa tête semble être d'un oiseau de proie. Mais ce griffon nous intéresse moins que sa provenance. Clermont-Ganneau ajoute qu'on lui avait assuré que le monument provenait d'une ruine située à deux ou trois heures d'al-Mountâr. Cette ruine ne doit pas être très éloignée de Ṣerifeah (en latin Sarafia ou Dioclétianopolis,[2] connue maintenant

* Je tiens à remercier M. S. Yeivin, directeur du Département des Antiquités, d'avoir bien voulu m'autoriser à publier ici cette statue.

[1] Ch. Clermont-Ganneau: *Archaeological Researches in Palestine*, II. London, 1896, p. 430.

[2] M. Avi-Yonah: *Géographie historique d'Eretz-Israël*. Jérusalem, 1949, p. 106 (en hébreu).

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sous le nom de Khirbat al-Achraf) où se trouvait probablement un temple de Sérapis (Osiris-Apis), ou peut-être un Sérapeum, d'où dérive son nom. Notre griffon d'Erez provient à l'origine, peut-être, du même endroit, et nous serions pleinement en droit d'émettre l'hypothèse qu'en ce lieu se trouvait aussi un Néméseion.

Notre griffon femelle d'Erez est muni d'un bec d'oiseau de proie, mais l'arrière-tête, à partir des yeux et de l'os frontal, est d'un animal félin. On ne peut pas déterminer avec certitude à quel genre d'oiseau ce bec a été emprunté, parce que sa pointe est malheureusement cassée; mais à en juger d'après sa longueur, il est probable qu'il s'agit d'un vautour *(gryps fulvus fulvus)*. Il est impossible aussi de se prononcer sur les oreilles et sur les cornes que pouvait porter le griffon. Le tronçon encore visible ne permet pas de discerner exactement ce qu'il a pu être; il semble cependant trop plein pour représenter une oreille; si cela avait été une oreille, le tronçon aurait été sans doute plus creux et plus ample à sa base. Le griffon est assis sur son arrière-train et d'assez longues mèches de cheveux tombent en désordre sur un cou garni en outre d'une crinière qui ressemble à une crinière de cheval taillée de près. Une double rangée de mamelles pendent à son ventre, et à la hauteur des pattes de devant, le griffon présente une poitrine féminine peu développée. Son corps est celui d'un lion plutôt que celui d'une lionne, avec des pattes courtes et épaisses, velues sur leur face postérieure. Sa patte de devant droite repose sur une roue à six rayons.

La statue du griffon d'Erez est en maint point similaire, par son style, au griffon mâle (Pl. 26 A) de la frise en relief conservée au Musée du Latran.[3] Le griffon de ce bas-relief n'est pas du même sexe que le nôtre, mais il offre indiscutablement des traits de ressemblance. Ainsi, bien que notre griffon ait les ailes brisées, ce qui en reste suffit amplement pour une reconstitution, si l'on se base sur les ailes du griffon du Musée du Latran (Pl. 26 C). Ses pattes sont velues sur leur face postérieure, comme celles du nôtre, quoique le poil ne soit pas ainsi touffu. La tête (sauf le museau qui, dans notre cas, est remplacé par un bec) a exactement la même structure que la sienne. La même crinière, courte et épaisse, lui descend le long du cou, et la tête est encadrée des mêmes mèches en désordre. Le griffon du Musée du Latran, retiré des décombres du Forum de Trajan, date probablement de la même époque ou à peu près.

[3] R. Garrucci: *Monumenti del Museo Lateranense descritti ed illustrati etc.* Roma, 1861, p. 79 et pl. XLI; Ch. Picard: Le Génie aux griffons et aux dauphins sur un 'vase d'Hadra' du Musée National d'Athènes, *Bull. de la Société Royale d'Alexandrie*, 32, 1938, p. 16, fig. 5.

Le griffon d'Erez porte sur le socle l'inscription grecque suivante (Pl. 26 B):

ΕΤΟΥC ΒΚΦ/ΜΕΡΚΟΥΡΙΟC ΑΛΕΞΑΝΔΡΟΥ/ΑΝΕΘΗΚΑ ΙΕΡΩΜΕΝΟC
L'an 522 (selon l'ère des Séleucides = A.D. 210/211) *Mercourios, fils d'Alexandre, j'ai dédié* (ce monument) *durant mon sacerdoce.*

Le griffon femelle à la roue est habituellement appelé 'la gryps némésiaque' parce que, sur certaines monnaies et même sur quelques monuments, il accompagne cette déesse. Il semble que le centre où ce culte de la déesse sous sa forme zoomorphe fut créé, ait été Alexandrie; l'Égypte est bien le pays où un pareil culte a pu prendre naissance, l'adoration des dieux sous leur forme zoomorphe y ayant été pratiquée à toutes les époques. D'autre part, la roue était peut-être déjà l'emblème de Némésis quand elle n'était encore qu'une divinité anthropomorphe. Cette roue n'a été placée entre les pattes du griffon femelle que comme symbole de la déesse, ainsi que le témoigne cette monnaie alexandrine où le griffon figure seul avec la roue, et porte en légende le mot: ΝΕΜΕΣΙΣ *Némésis*.[4] En outre, Alan Rowe, au cours des fouilles qu'il exécuta dans les catacombes de Kom ash-Shuqafa, trouva dans les loculi (sépulture D) le cadavre d'une prêtresse de Némésis qui portait à son cou un collier en or avec la roue némésiaque à huit rayons (Fig. 1) comme pendentif.[5] La sépulture remontait

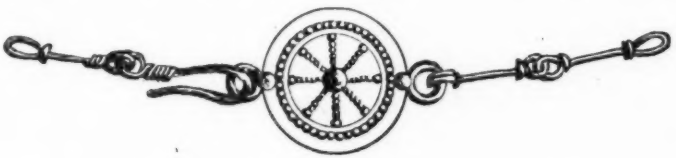

Fig. 1. Collier trouvé à Kom ash-Shuqafa; longueur totale 37.4 cm.

à l'époque romaine. Alan Rowe m'a communiqué que selon des informations qu'il avait reçues, deux autres colliers pareils à celui-là avaient été trouvés dans le pays de Galles (Carmarthenshire); ils dataient de la même époque. Les prêtresses ensevelies dans les catacombes de Kom ash-Shuqafa officiaient probablement dans le Néméseion qui existait à Alexandrie (sur l'emplacement actuel des

[4] J. Leibovitch: Quelques éléments de la décoration égyptienne sous le Nouvel Empire, *Bull. de l'Institut d'Égypte*, 26, 1944, p. 253, fig. 30.
[5] A. Rowe: Kom el-Shoukafa in the Light of the Excavations of the Graeco-Roman Museum, *Bull. de la Société Royale d'Arch. d'Alexandrie*, 35, 1941-1942, pl. XIV, 1; idem: A History of Ancient Cyrenaica, *Suppl. aux Annales du Service des Antiquités de l'Égypte*, cahier 12, 1948, p. 81, fig. 13.

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cimetières européens, à proximité du quartier Delta). Appianus, un habitant de la ville d'Alexandrie[6] au temps de Trajan, de Hadrien et d'Antonin le Pieux, rapporte que la tête de Pompée avait été enterrée en ce lieu appelé alors 'l'enceinte sacrée de Némésis'.

D'autres monnaies se rapportant à la déesse Némésis furent encore frappées à Alexandrie, à partir de Domitien et sous les premiers Antonins.[7] Un premier type est celui d'une sphinge ailée portant le modius sur la tête et posant une patte sur la roue (Pl. 29 A-C). Des mamelles bien visibles pendent à son ventre; d'ailleurs, Némésis a été tôt associée à Isis dans le culte alexandrin[8] où elle avait encore un autre temple et où l'on croyait peut-être que Némésis provenait des Nemêti, les deux *Ma'.t*[9] qui étaient présentes aux scènes de psychostasie (pèsement des âmes). La *Ma'.t* avait pour rôle d'introduire le défunt dans la salle d'audience et de surveiller l'équilibre exact de la balance, car sur l'un des plateaux, on mettait le vase du coeur et sur l'autre, les poids. Némésis anthropomorphe avait aussi pour fonction de faire observer en toute chose la juste mesure, et c'est pourquoi on la voit portant la balance (relief de Baalbek[10]) ou un bâton représentant une coudée (relief de Palmyre[11]). La balance penchait-elle trop en faveur de quelqu'un (dans les jeux olympiques par exemple), elle s'empressait d'en rétablir l'équilibre. Ses fonctions chtoniennes sont au reste confirmées par plusieurs monuments funéraires, dont l'un se trouve au Musée d'Alexandrie[12] et dont un autre est conservé au Musée de Bologne (Fig. 2). Le premier est un monument funéraire sur lequel est représentée la gryps némésiaque avec une roue qui ressemble à un bouclier, le second, un relief en marbre représentant le défunt qui, cette fois, est un enfant nommé Souper âgé de trois ans et deux mois. Il est étendu sur un lit, l'avant-corps relevé, tenant d'une main un double thyrse et de l'autre, un vase en montrant du geste un griffon némésiaque. Ce monument provient d'Alexandrie, et Schauenburg le date du deuxième ou troisième siècle de l'ère actuelle.

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[6] E. Breccia: *Alexandrea ad Aegyptum*. Bergamo, 1922, p. 102.

[7] Je tiens à remercier M. J. Schwartz, de l'Université de Strasbourg, d'avoir bien voulu me communiquer toutes les références bibliographiques concernant les monnaies.

[8] H. Herter: Nemesis, *apud* Pauly-Wissowa: *Real-Encyclopädie der classischen Altertumswissenschaft*, XVI, 2. Stuttgart, 1935, cols. 2338-2380.

[9] *Ibid.*, col. 2363; citant I. Lévy: *Cinquantenaire de l'École pratique des Hautes Études, Mélanges*. Paris, 1921, pp. 277 ss.

[10] D. Krencker, Th. von Luepke & H. Winnefeld: *Baalbek*, II. Berlin, 1923, p. 127, fig. 180.

[11] H. Seyrig: Antiquités syriennes, Monuments syriens du culte de Némésis, *Syria*, 13, 1932, p. 51, pl. XVIII, 4.

[12] Leibovitch, *op. cit.* (plus haut, n. 4), p. 254, fig. 31.

Fig. 2. Relief funéraire en marbre, Musée de Bologne.[13]

Quant au sens à attribuer à la roue, le rapport entre Némésis et Tyché (la Fortune) ne fait aucun doute. D'aucuns pensent qu'il s'agit de l'instabilité du sort ou du destin,[14] mais la roue se prêterait encore à d'autres explications.

En Égypte, sous le Nouvel Empire, l'évolution du griffon subit une nouvelle phase. Nous savons qu'il était au début hiéracocéphale et qu'il s'appelait alors le *tesh-tesh*,[15] qui est celui qui déchire, coupe en pièces, triture et piétine. Il est connu sous cette appellation jusqu'à la fin du Moyen-Empire. Outre ce nom, il en a connu d'autres en Égypte, toujours sous le Moyen-Empire.[16] Mais à partir du Nouvel Empire, il possède une tête de vautour et il est confondu avec le lévrier ailé à tête de chacal; parfois il a une tête séthienne.[17] Appelé dorénavant le *'akhekh*,[18] il devient en même temps un symbole de vitesse, et il est doué d'une voix qui retentit comme celle d'un lion rugissant. C'est peut-être en souvenir du symbole de vitesse que la gryps némésiaque tient une roue, pour montrer avec quelle rapidité elle se meut et agit. Car c'est une déesse terrible, une déesse de

[13] K. Schauenburg: Pluton und Dionysos, *Jahrb. des deutschen arch. Instituts*, 68, 1953, p. 70, fig. 23.
[14] Seyrig, *op. cit.* (plus haut, n. 11), p. 52, n. 1.
[15] P. E. Newberry & F. L. Griffith: *El-Bersheh*, II. London, 1891-1892, pl. XVI, tombe nº 5.
[16] P. E. Newberry: *Beni-Hasan*, II. London, 1893, pl. IV, tombe nº 15; cf. Leibovitch, *op. cit.* (plus haut, n. 4), p. 237.
[17] L. Borchardt: *Allerhand Kleinigkeiten*. Leipzig, 1933, p. 37, pl. 13, à comparer avec K. Sethe: *Urgeschichte und älteste Religion der Ägypter*. Leipzig, 1930, p. 72 et fig.
[18] Leibovitch, *op. cit.* (plus haut, n. 4), 25, 1943, p. 193; S. Hassan: *Le Poème dit de Pentaour et le rapport officiel sur la bataille de Qadesh*. Le Caire, 1929, pl. 80; Ch. Kuentz: *La Bataille de Qadech*. Le Caire, 1928-1934, p. 267, l. 166; E. A. W. Budge, ed.: *Fascimiles of Egyptian Hieratic Papyri in the British Museum*, II. London, 1923, pl. LXXX, col. IV (=British Museum Papyrus No. 10181, Sallier III).

vengeance; peut-être est-ce pour cela que les anciens Grecs n'aimaient pas à rencontrer ses statues et qu'elle devint zoomorphe.[19]

On pourrait cependant trouver une explication plausible de la roue dans le plat d'argent trouvé par le prof. Emery à la salle 3 de la tombe nº 3 à Ballana,[20] en Basse Nubie (Pl. 28 A). Ce plat est orné d'une scène mythologique en bas-relief où l'on voit Hermès assis sur un globe sur lequel un griffon pose sa patte droite de devant. Le dieu tient dans sa main gauche un épi de blé et de sa main droite, il tend une coupe remplie à un serpent enroulé autour d'un arbre, en face de lui. Le griffon posant la patte sur le globe ou disque, qui ne peut être que le disque solaire, pourrait bien faire allusion à une des roues du char d'Hélios et nous fournirait ainsi l'explication de la roue némésiaque.

Némésis déesse anthropomorphe apparaît souvent en association avec Hélios, ainsi que nous le montrent les reliefs de Palmyre et de Doura,[21] comme l'on voit aussi Harpocrate, sous les traits de Héraclès, en rapport avec la gryps némésiaque sur quelques monnaies frappées sous les premiers Antonins.[22] Puisque Némésis est une déesse vengeresse qui punit le crime, il n'est pas étonnant de la voir associée à Hélios qui, lui aussi, cherche les malfaiteurs et les châtie. Le Sphinx de Gîza s'appelait autrefois Harmakhis, c'est-à-dire 'Horus dans son horizon'. Il était en étroite relation avec le culte solaire, et c'est pourquoi nous trouvons des monnaies frappées en l'an 2 d'Antonin le Pieux portant un sphinx couché, surmonté du disque solaire (Pl. 29 D).[23] Ceci nous explique pourquoi Némésis est représentée sur des monnaies comme sphinge androcéphale posant une patte sur la roue; cette représentation pourrait être considérée comme un stade de transition entre l'état anthropomorphe et l'état zoomorphe. Pour la même raison, certains reliefs et même des monnaies nous montrent la gryps némésiaque assise sur la croupe d'un sphinx panthée. Le Musée du Caire possède[24] deux reliefs sur le même thème, dont le plus beau est reproduit ici (Pl. 27A); il provient de Coptos (journal d'entrée nº 37538). Nous y voyons Hélios représenté par un sphinx panthée nimbé; au-dessous de sa coiffure auréolée, il porte le *Némès*, comme pour indiquer son pays d'origine.

[19] P. Perdrizet: Némésis, *Bull. de correspondance hellénique*, 36, 1912, p. 248; 38, 1914, p. 89.
[20] W. B. Emery: *The Royal Tombs of Ballana and Qustul*. Cairo, 1938, I, p. 79; II, pl. 65 B; idem: *Nubian Treasure*. London, 1948, pl. 22 A.
[21] Seyrig, *op. cit.* (plus haut, n. 11), pl. XVIII.
[22] *Ibid.*, pp. 58-59.
[23] G. Dattari: *Numi Augg. Alexandrini*. Cairo, 1901, pl. XXXI, nº 3084.
[24] O. Guéraud: Sphinx composites au Musée du Caire, *Annales du Service des Antiquités de l'Égypte*, 35, 1935, pp. 4-25. (Nous nous sommes permis d'apporter une légère modification à la partie complétée de l'inscription grecque publiée par Guéraud.)

Son véritable nimbe est composé de huit têtes d'animaux symboliques; les quatre à gauche de la couronne sont: une tête de lion (le lion symbolise le souverain de l'Égypte), une tête d'Ibis pour Thoth, de chacal pour Anubis, et de boeuf ou de taureau pour Apis; à droite de la couronne, une tête de faucon pour Horus ou Hélios, d'un cynocéphale (autre représentation, plus tardive, de Thoth), de chat pour la déesse Bas.tet et de bélier pour Chnuphis. La queue ne se termine pas en serpent uraeus, comme d'habitude, mais en serpent *ḏt* de l'éternité, qui est aussi le nom du cobra. De son poitrail émerge une tête de crocodile dont le corps semble se prolonger et se confondre avec celui du sphinx et dont la queue se termine dans la patte arrière du sphinx; c'est le dieu Soukhos (en égyptien le dieu Sébek); ce dieu était honoré dans le nome arsinoïte, le Fayoum actuel. Dans l'ancienne Égypte, le dieu Sébek était comparé et même assimilé depuis la Vme dynastie *(Textes des Pyramides)*[25] au soleil qui naît d'entre les jambes de la vache céleste. C'est à ce sphinx composite que la gryps némésiaque est associée, et une inscription grecque au bas du relief en précise la dédicace:

> Ἡ σύνοδος Τιθοήους θεοῦ μεγ[άλωι θ]εῶι Ἀ[μ]μωνίῳ ἐπὶ Κομάρου ἀρχιερέως ἐποίησεν εὐσεβείας χά[ριν ἔτους] ιη' Θωθ τρισκαιδεκάτῃ
>
> *La confrérie du dieu Tithoès* (un demi-dieu mentionné par Manéthon)[26] *a dédié* (ce monument) *au grand dieu Amon par piété, sous le grand prêtre Komaros, l'an 18, le treizième* (jour) *du mois Thoth.*

Le sphinx panthée porte une couronne égyptienne et marche sur un serpent, allusion au serpent du mal qui est toujours mis à mort par le dieu Seth.[27] Devant le sphinx, un prisonnier asiatique (portant une barbe touffue) demande grâce, car on voit souvent en Égypte le sphinx écraser sous ses pieds les ennemis traditionnels du pays. On se demandera à juste titre quels rapports existent entre la gryps némésiaque et le sphinx panthée. C'est une simple similitude de fonctions: la Némésis et le dieu Hélios punissent tous les deux le crime et poursuivent ceux qui le commettent. Un relief du même genre se trouve dans

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[25] K. Sethe: *Übersetzung und Kommentar zu den altägyptischen Pyramidentexten*, II. Glückstadt, 1937, p. 355, nos. 507-510; H. Bonnet: *Reallexikon der ägyptischen Religionsgeschichte*. Berlin, 1952, p. 757.

[26] W. G. Waddell: *Manetho*. London, 1940, p. 17.

[27] G. Nagel: Set dans la barque solaire, *Bull. de l'Institut Français d'Archéologie Orientale*, 28, 1929, p. 35; J. Leibovitch: Une statuette du dieu Seth, *Annales du Service des Antiquités de l'Égypte*, 44, 1944, pp. 103-104, figs. 11 et 12.

les Musées Royaux d'Art et d'Histoire à Bruxelles (c'est la stèle inv. nº 1505; v. Pl. 27 B).[28] Là aussi, le sphinx est représenté de face, portant le tablier traditionnel et la couronne reposant sur des cornes de bélier qui sortent de chaque côté d'un disque solaire central. C'est visiblement le dieu Hélios, car son nimbe est parsemé de rayons et il écrase des pieds le serpent du mal qui dresse la tête. Sa queue se termine aussi en un énorme serpent. Sur son dos, il porte la gryps némésiaque aux ailes arrondies et sa roue, comme d'habitude. Le dieu Soukhos est absent, mais on voit un autre élément apparaître derrière le sphinx: le disque solaire ailé, ce qui revient au même. C'est toujours l'association entre Némésis et Hélios.

Le même thème est mis en relief sur quelques monnaies impériales alexandrines. Nous avons d'abord des monnaies avec le sphinx panthée tout seul, correspondant à celle précitée qui représente le sphinx tout seul, surmonté du disque solaire, ou Hélios (Dattari, nº 3084; Pl. 29 D), comme sur la monnaie de l'an 13 de Trajan (Dattari, nº 1180; Pl. 29 E); nous avons aussi le sphinx panthée avec la gryps némésiaque, au complet, comme sur la monnaie de l'an 18 d'Hadrien (Dattari, nº 2002; Pl. 29 F).

Il existe un autre thème, celui de la gryps némésiaque avec la roue au sommet ou à côté d'une colonne. Une intaille en cornaline (Pl. 28 B) a été récemment trouvée par Y. Naor à Tell al-Bourdj près de Dor (Tantourah). Ce qui reste de la scène permet de distinguer une femme qui, d'une main, porte la corne d'abondance, et de l'autre, tient une autre personne par l'avant-bras. Derrière cette figure de femme qui est peut-être une déesse, on aperçoit une colonne au sommet de laquelle est représentée la gryps némésiaque à la roue. Le thème de la colonne se rencontre aussi sur des monnaies.

Le culte de Némésis était très répandu au Proche Orient, et en 1932, Seyrig[29] compta quinze endroits où l'on avait trouvé des objets ayant rapport à Némésis ou à son culte. Certains de ces endroits n'ont de particulier que le fait qu'on y ait découvert des monnaies et ne sauraient être appelés des centres de culte. La région de Dioclétianopolis où l'on a trouvé le griffon d'Erez devra être dorénavant ajoutée à la liste.

[28] Je remercie le A. C. L., Bruxelles, de m'avoir fait parvenir cette photo.
[29] Seyrig, *op. cit.* (plus haut, n. 11), pp. 50-51.

Excavations at Wadi Rabah

J. KAPLAN

THE SITE

THIS site is situated on the left bank of Wadi Rabah, one of the tributaries of the Yarkon, about one kilometre east of the tell of Rosh ha-'Ayin—probably ancient Aphek.[1] The valley originates in the mountains of Samaria and runs from east to west; it turns northward near Aphek in a wide bow several hundred metres in length, and thence resumes a western course, discharging into the Yarkon near the Deir al-Mir lands (see Fig. 1). The reddish-brown soil of the locality, alluvial and very fertile, is probably the reason why the ancient settlement was established here. The strategic importance of the site should, however, not be ignored, since it lies in the centre of the narrow plain between the sources of the Yarkon on the one side and the hill region on the other; in every period of history this has functioned as a land corridor northwards to Syria and Mesopo-

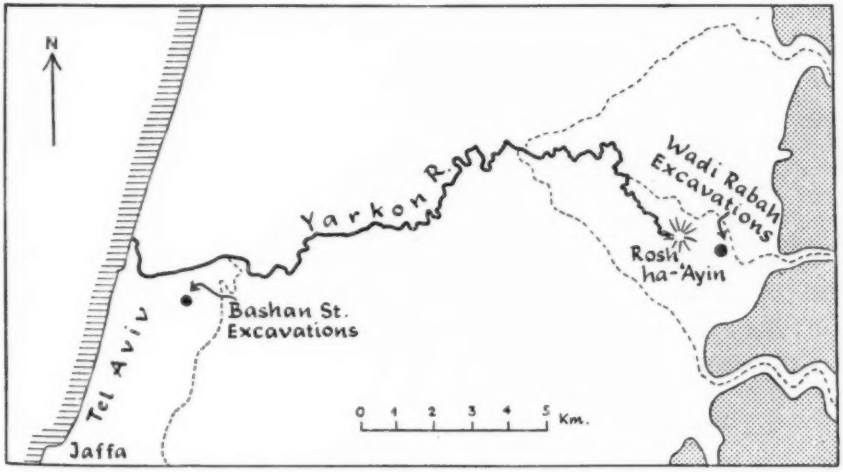

Fig. 1. Map showing the situation of Wadi Rabah.

[1] Cf. *Encyclopaedia Biblica*, I. Jerusalem, 1950, cols. 501-503 (Hebrew).

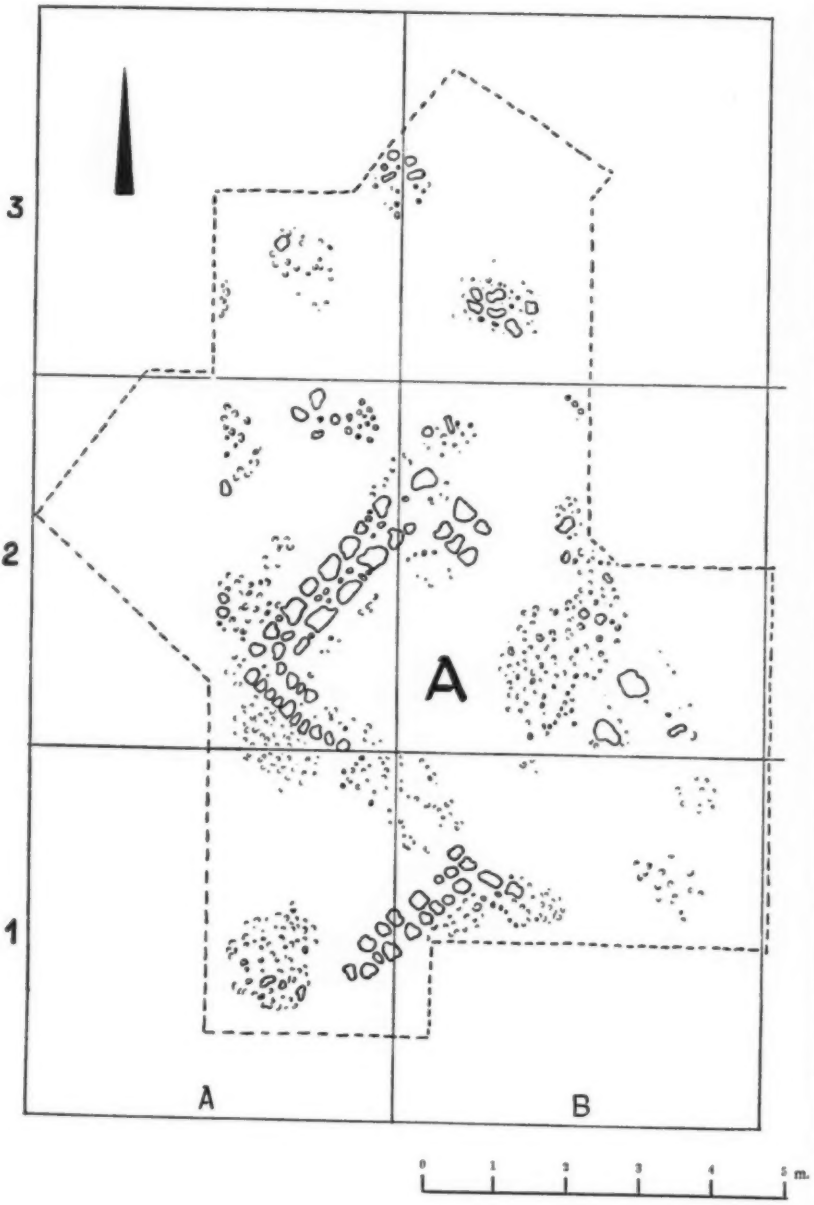

Fig. 2. Foundations of room A.

tamia and southwards to Egypt. The *via maris* passed here, and the nearby town of Aphek served as a way-station and fortress.[2]

The area of the ancient site is indistinguishable from its surroundings, with none of the mounds, ash traces or scattered stones typical of an ancient site. Only after a close scrutiny of the area were fragments of pottery and flint flakes noticed, concentration being greatest in the molehills, which are very numerous in this soil. Many of these hillocks are mixed with a whitish ash thrown up from a depth of 20-30 cm.—a sign that beneath the upper covering of the soil lie hidden strata formed by ancient habitation. The area of the ancient site is about 6 acres and it extends along the western bank of the wadi at a distance of 20 m. from it.

THE EXCAVATION

The excavation was carried out in November 1952 and took three weeks.[3] A total area of 60 sq. m. was uncovered, and after a layer of 20 cm. of soil had been removed, heaps of river pebbles mixed with ashes and potsherds began to appear. As the excavation progressed, fragments of the foundations of room (A) appeared (Fig. 2), and another fragment of foundations, at some distance from it. It became evident that the room had originally been rectangular in shape. These foundations were built of river pebbles both large and small, but the walls standing on them had apparently been of beaten earth (terre pisée). The thickness of the foundations was 45-50 cm. The potsherds first identified were of the Ghassulian phase of the Chalcolithic period, mixed with a number of red- or black-burnished sherds of the type previously discovered in the excavations at ha-Bashan Street, Tel Aviv.[4] At the same time we found other sherds decorated with incised herring-bone patterns, wavy lines, cylinder stamps, etc. It was clear, therefore, that this upper stratum, whose depth below the surface did not exceed 30 cm., contained the mixed remains of a number of phases of the Chalcolithic period, one resembling the Ghassulian phase and the other identical with that found in ha-Bashan Street, Tel Aviv, to be termed henceforth the 'Wadi Rabah' Chalcolithic phase; the latter chiefly resembles stratum VIII at

[2] F. M. Abel: *Géographie de la Palestine*, II. Paris, 1938, p. 218; *Encyclopaedia Biblica*, II, Jerusalem, 1954, col. 715 (Hebrew).

[3] The excavation was made on behalf of the Israel Exploration Society in co-operation with the Museum of Ancient History of Tel Aviv-Jaffa. The author was assisted by Mrs. Haya Kaplan and R. Gophnah. The pottery drawings are the work of Mrs. Kaplan.

[4] J. Kaplan: Archaeological Survey on the Left Bank of the Yarkon River, *EI*, 2, 1953, p. 159 (Hebrew).

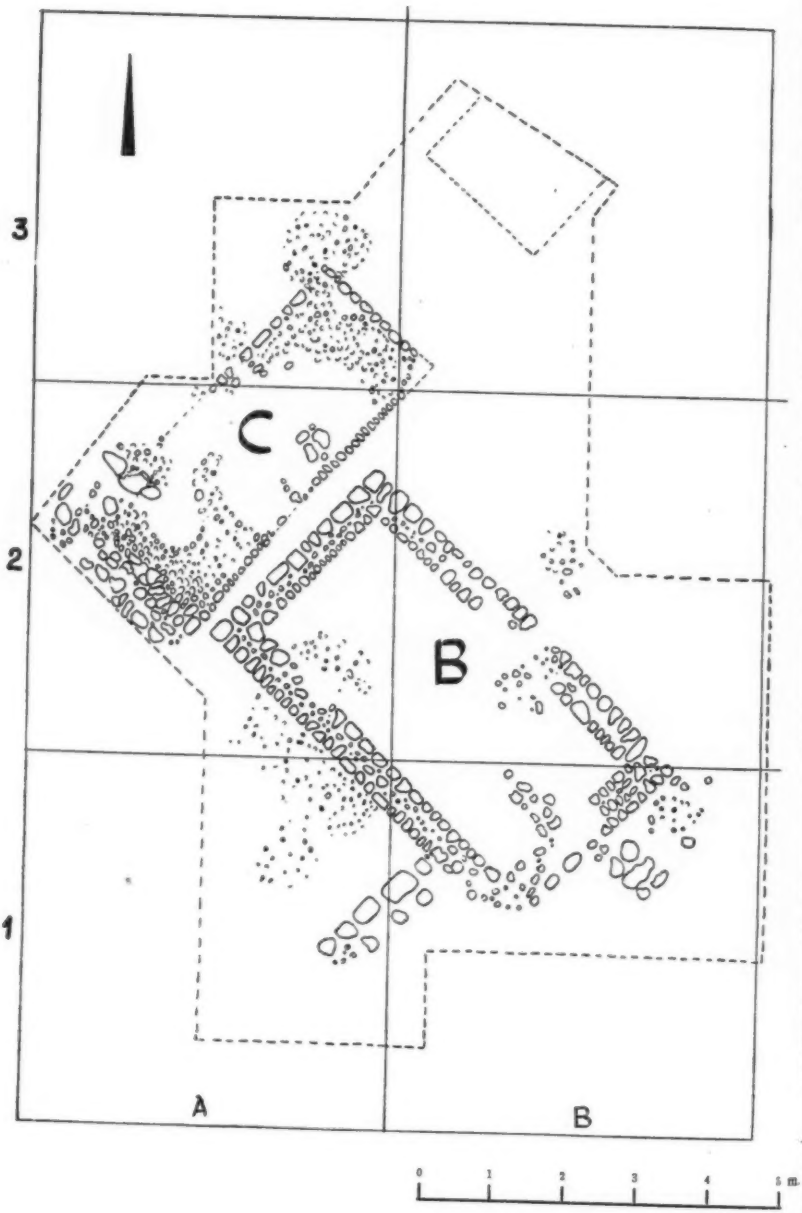

Fig. 3. Room B and wall C.

Jericho. A determination of the relative age of this structure was possible only after the dismantling of part of the floor of the room, in which it was found complete (square B2). This piece of floor contained pottery fragments of Ghassulian type and fragments of human bones, including some from a skull; the sherds under the floor were of the Chalcolithic phase discovered in ha-Bashan Street, with black-burnished ware among them. It follows that this piece of floor or burial-place was undisturbed; hence these traces of the upper building belonged to the Ghassulian phase. As excavation proceeded, and after the remains of the upper building (A) had been removed, there were found beneath them (at a depth of 10-15 cm.) building remains similar to the first, in the form of a rectangular room (B) (Pl. 29 G and Fig. 3), but in somewhat better condition. The lines of these foundations did not exactly follow those of the structures above them. It could be recognized, however, that the builders of the foundations of the upper stratum had somehow followed the lines of the earlier building still traceable on the ground, although the collapsed earth walls had blurred the outlines of the walls of the room. The measurements of room (B) were 4.75 by 2.15 m., and the thickness of the foundation wall was 45-50 cm. The potsherds discovered there belonged to the 'Wadi Rabah' Chalcolithic phase; Ghassulian sherds were conspicuous by their absence. On the other hand, isolated sherds of the Neolithic period were found. On both sides of the south-east corner of the room were found fragments of the foundations of other rooms, whereas along the north-west foundation and parallel with it was discovered the foundation of a wall two metres thick. This foundation, marked (C) (Pl. 29 H and Fig. 3), continued towards the north-east and stopped at a distance of 1.5 m. from the corner of the room. Here in all probability had been the entrance, but excavation on the other side at the supposed jamb of the entrance failed to reveal similar building traces, owing to the destruction caused by a Ghassulian ash-pit. At the close of the excavations, it was seen that foundations (B) and (C) stood upon virgin soil.

To sum up, we find the following development of settlement:

Chalcolithic
- Ghassulian —building (A)
- Pre-Ghassulian ('Wadi Rabah') —buildings (B) and (C)

Neolithic —no building traces.

THE CHALCOLITHIC POTTERY

Most of the Ghassulian pottery was discovered in the upper part of the excavation and in the patch of floor preserved in room (A). None of the types differs from those already known from the excavations at Teleilat Ghassul, nor is this the place to describe them again (Fig. 4:8-14; Fig. 5:1, 2, 4-5).[5] We shall, however, give a full description of the pottery of the pre-Ghassulian 'Wadi Rabah' phase, which constituted the greater part of the finds.

Ware

Most of the vessels are made of clay taken from heavy soil, generally well levigated. The exterior colour of these vessels is bright-red and their section is brown-red, but the core is slightly grey; that of the black-burnished is bluish or black. Often fine grey grit is added to the paste. In some of the sherds the phenomenon of 'petrifaction' of the fabric is recognizable, as in the pottery of the cave of Abu Usba on Mount Carmel.[6]

Forms

Bowls. The commonest type is the carinated bowl (Fig. 5:10).[7] Another type of this bowl, known neither at Jericho nor at Teleilat Ghassul, has the carination near the rim (Fig. 5:18). The 'flower pot' type was, however, also found.

Pithoi. The commonest type is that with flat thickened top and narrow ledge handles (Fig. 5:2, 3).[8]

Hole-mouth jars. The commonest type has a flat slightly thickened rim, which slopes inwards (Fig. 5:7).[9] The sharp or rounded rim is, however, also found.

Jars. The type with bow-rim so characteristic of Jericho VIII is very common (Fig. 5:8, 9).[10]

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[5] Compare with A. Mallon, R. Koeppel & R. Neuville: *Teleilat Ghassul*, I. Rome, 1934 (hereafter *TG* I); R. Koeppel and others: *Teleilat Ghassul*, II. Rome, 1940 (hereafter *TG* II); I. Ben-Dor: Pottery of the Middle and late Neolithic Periods, *apud* J. Garstang: Jericho: City and Necropolis, *AAA*, 23, 1936 (hereafter *J*). Especially cf. our Fig. 4:8 with *TG* I, Fig. 60:6, 19, and see *J*, p. 89; our Fig. 4:9 with *TG* II, Pl. 93:3, and *J*, Pl. XXXII:30; our Fig. 4:10, 13 with *TG* II, Pl. 93:1; our Fig. 4:11 with *TG* II, Pl. 95; our Fig. 4:12 with *TG* II, Pl. 96:4, 7; our Fig. 4:14 with *TG* I, Fig. 56:4; our Fig. 5:1 with *TG* II, Pl. 87:4; our Fig. 5:4 with *TG* I, Pl. 43, and *J*, Pl. XXXII:29 B; our Fig. 5:5 with *TG* I, Fig. 42:4.

[6] M. Stekelis & G. Haas: The Abu Usba Cave (Mount Carmel), *IEJ*, 2, 1952, p. 30. There Stekelis calls these sherds 'fossilized'.

[7] *J*, Pl. XXXII:26.

[8] *J*, Pl. XXXII:24 A; for the type of ledge handle, see 29 A.

[9] *J*, Pl. XXXII:25 A.

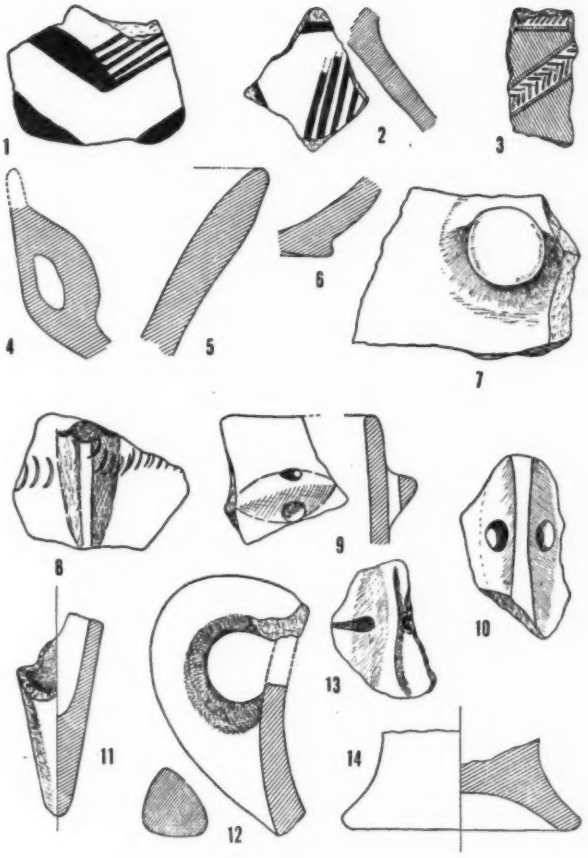
[10] *J*, Pl. XXXII:21, and p. 85.

Fig. 4.

0 1 2 3

No.	Field No.
1,2,	1267,5
3	732
4	780
5	703
6	151
7	887
8	516
9	347
10	330
11	319
12	182
13	277
14	299

Fig. 4.



No.	Field No.	Description	Period
			NEOLITHIC
1,2,	1267,583	Sherds. Reddish ware, buff core. Red burnish decoration	Jericho IX
3	732	Sherd. Brown-red ware, orange core. Purple-red wash	Yarmukian
4	780	Jar loop handle. Reddish ware, red core, numerous white grits	" "
5	703	Bowl. Coarse red-brown ware, coarse white grits	" "
6	151	Bowl. Rose burnished ware, occasional coarse white grits	" "
7	887	Cylindrical knob handle. Yellowish ware, brown core (petrified), straw impressions	Jericho IX
			CHALCOLITHIC
8	516	Lug handle. Buff ware, grey core, fine grey grits, purple-red wash, nail incisions	Ghassulian
9	347	Lug handle. Reddish ware, buff core, grey grits	" "
10	330	Lug handle. Bright-red ware, brown core, coarse white grits, dark-red wash	" "
11	319	Horn-shaped cup. Fine buff ware	" "
12	182	Lug handle. Brown ware (petrified), red wash	" "
13	277	Lug handle. Brown-red ware, dark-brown core, coarse white grits	" "
14	299	Incense bowl. Light-brown ware, grey grits, red wash inside and outside	" "

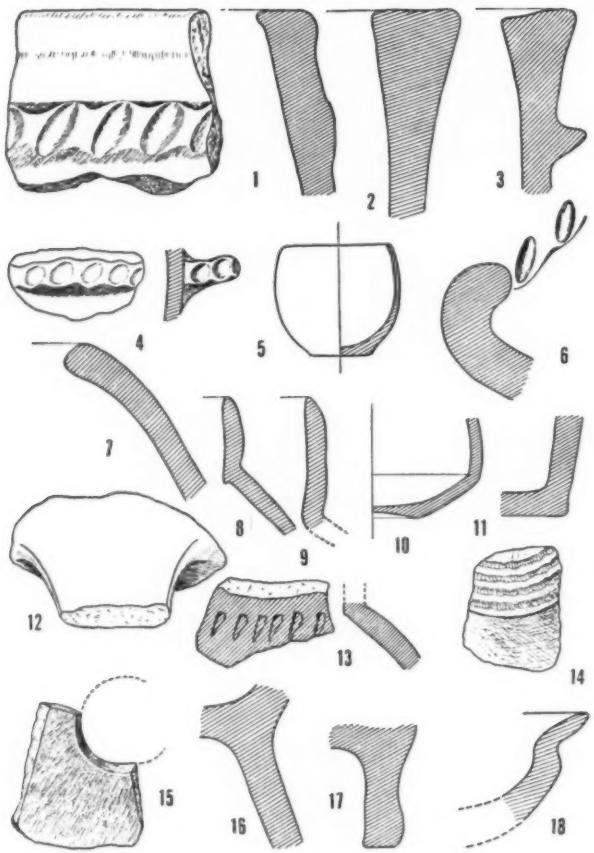
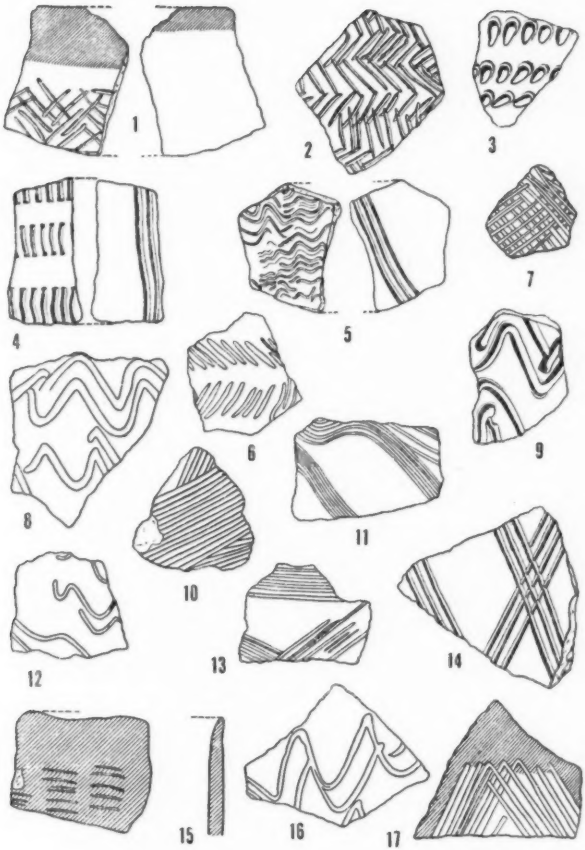


Fig. 5.

Fig. 6.

			CHALCOLITHIC	
1	148	Pithoi. Reddish ware, grey grits. Plastic band with finger impressions	Ghassulian	1 239
2	713	Pithoi. Brown ware, coarse white grits	Wadi Rabah	2 901
3	364	Pithoi. Reddish ware, dark-brown core, coarse white grits	" "	3 98
4	341	Small ledge handle. Buff ware, grey grits, traces of red wash	Ghassulian	4 375
5	852	Bowl. Reddish ware, brown core (petrified)	" "	
6	1	Jar. Orange ware, coarse grey grits. Finger impressions	" "	5 367
7	899	Hole-mouth jar. Brown-red ware, brown core (petrified), grey grits	Wadi Rabah	
8	276	Bow rim. Reddish ware, white grits, red slip	" "	6 386
9	308	Bow rim. Reddish-brown ware, grey core, red slip	" "	7 480
10	392	Carinated bowl. Reddish ware, dark-red burnished outside and grey-red inside	" "	8 213
11	505	Flat base. Reddish ware, grey core, red slip	" "	9 479
12	731	Loop handle. Brown-red ware, grey core	" "	10 591
13	448	Sherd. Yellowish-brown ware. Band of notches, red slip	" "	11 889
14	839	Mat-impressed base. Reddish ware, grey grits	" "	12 369
15	432	Sherd of holed pedestal. Brown-red ware, dark-red burnish	" "	13 478
16	744	Pedestaled bowl. Brown-red ware, grey core, dark-red burnished inside ..	" "	14 755
17	331	High ring-base bowl. Bluish-black ware, black burnish	" "	15 266
18	963	Bowl. Red ware, red burnished inside and on rim outside	" "	16 761
				17 715

Fig. 6.



			CHALCOLITHIC	
			Wadi	Rabah
1	239	Bowl. Buff ware, grey grits, incised chevron pattern	"	"
2	901	Light-red ware, grey core. Bands of incised herring-bone pattern	"	"
3	98	Reddish ware, brown core, 'point incision'	"	"
4	375	Bowl. Brown-red ware. Roller impressions and red burnish outside, incised group of lines inside	"	"
5	367	Bowl. Brown-red ware, grey core. Incised wavy lines and red burnish outside, incised group of lines inside	"	"
6	386	Light-red ware, bluish-black core. Incised herring-bone pattern, red slip around	"	"
7	480	Brown ware. Incised chevron pattern	"	"
8	213	Brown-red coarse ware. Incised wavy lines	"	"
9	479	Dark-brown ware, white grits. Incised wavy lines	"	"
10	591	Brown-red ware. Combed bands	"	"
11	889	Brown ware, grey core. Incised group of curved parallel lines	"	"
12	369	Light-red ware. Incised wavy lines	"	"
13	478	Reddish ware. Incised bands of parallel lines	"	"
14	755	Reddish ware, brown core. Incised group of parallel lines crossing each other	"	"
15	266	Reddish ware. Incised short horizontal lines and red slip all over	"	"
16	761	Brown-grey ware. Incised wavy lines	"	"
17	715	Buff ware, dark-grey core. Incised chevron pattern, red burnish around	"	"

Pedestaled bowls. Few pieces were found, one belonging to the vertical stem of the pedestal; it contained a round hole. The others probably belong to incense bowls (Fig. 5:15-17).[11]

Handles. The forms were numerous; they were chiefly narrow ledge handles with flat upper part and sloped lower part (Fig. 5:3), and loop handles flattened and widened at the ends (Fig. 5:12);[12] there were also some lug handles and knob handles.

Bases. Most of the bases are flat with the wall inclined at an acute angle to the base, but vessels with wall forming a right angle with the base also occur here. The concave base and many mat impressions were also found (Fig. 5:10, 11, 14).[13]

Decoration

The usual forms of decoration here are red slip, burnishing, and incision; less frequent are thumb indentation and roller impression. The burnishing is found on slipped surfaces only; sometimes on vessels with incised decoration the burnishing is done round the incised portion. The commonest incised decorations are the herring-bone and wavy lines; the first consists of a horizontal band around the pot or a number of parallel bands (Fig. 6:2, 6);[14] the other consists of a group of lines which often touch one another (Fig. 6:5, 8, 9, 12, 16).[15] The 'chevron' pattern running horizontally in a band around the vessel belongs to the latter type (Fig. 6:7, 13, 17).[16] Incisions constituting a group of parallel lines are a very common form. Sometimes these lines are straight and intersect (Fig. 6:14), while sometimes the group continues in various curves which almost touch one another (Fig. 6:11). Groups of parallel lines are also common on the inner side of bowls (Fig. 6:4, 5).[17] Among other noteworthy forms of incised decoration are short horizontal lines near the rim of the vessel and 'point incision', executed as if the potter held his hand at an angle when making the incision (Fig. 6:3, 15).[18] Yet another type of decoration is combing in broad bands in

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[11] *J*, Pl. XXXII:32, 33 A.

[12] *J*, Pl. XXXII:27.

[13] *J*, Pl. XXXIII:22; vessels with their wall forming a right angle with their base are not known at Jericho and Ghassul. For mat impressions, cf. *TG* I, p. 91, and Pl. 39; *TG* II, Pls. 83, 84, and *J*, p. 87 and Pl. XXXII:33 B.

[14] *TG* I, Fig. 60:3, 4; *TG* II, Pl. 96:3; *J*, Pl. XXXIII:18.

[15] *J*, Pl. XXXII:35 (called 'waving grass'); this design is known at Ghassul in paint, cf. *TG* I, Pl. 54:4 and *TG* II, Pl. 80:15, 16; Pl. 89:3.

[16] *TG* I, Pl. 54:15; *J*, p. 89 in paint, and incised on a basalt bowl, cf. *TG* I, Fig. 23:4.

[17] *J*, p. 89.

[18] Point incision is common at Ghassul, cf. *TG* II, Pl. 88.

various directions (Fig. 6:10). Roller impression was discovered here for the first time in this country in the Chalcolithic period. It is executed in parallel, horizontal bands around the pot, while the painting and burnishing were applied after rolling (Fig. 6:4).

THE NEOLITHIC POTTERY

As stated above, the number of sherds was small, and they were discovered without clear stratification. They belong to the two Neolithic cultures known in Palestine: the Yarmukian and that of Jericho IX.[19] Of the Yarmukian type are two fragments decorated with incised bands of herring-bone pattern between two incised lines; the areas bordering these are painted with purple-red paint (Fig. 4:3),[20] and fragments of a jar rim and a bowl disc-base (Fig. 4:4-6).[21] The 'Jericho IX' type was represented by two fragments decorated with painted and burnished 'chevron' designs (Fig. 4:1, 2), and a fragment with a cylindrical knob handle (Fig. 4:7).[22]

OTHER FINDS

Stone industry. The tools found are made of nodules of flint and silex from the wadi debris; some were discovered outside the excavated area. The number of finds is small, and consists chiefly of sickle blades and chisels. Most of them belong to the Ghassulian sphere except for two small borers which probably belong to the Neolithic Period.

Bone implements. Among these were a few broken awls.

Spindle whorls. Most of these are made of broken pieces of pottery. They are nearly all circular in form with a hole pierced through their centres, but there is one made of a small earthenware plaque perforated before firing.

SUMMARY

The main stratigraphical result obtained in the excavations at Wadi Rabah was the uncovering, under the Ghassulian, of a new pre-Ghassulian phase resembling Jericho phase VIII. This phase, which we have termed 'Wadi Rabah' phase,

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[19] M. Stekelis: A New Neolithic Industry: The Yarmukian of Palestine, *IEJ*, 1, 1951, pp. 1-19; idem: Two More Yarmukian Figurines, *IEJ*, 2, 1952, pp. 216-217; see also *IEJ*, 5, 1955, p. 198.

[20] Stekelis, *op. cit.* (above, n. 19), 1951, Pl. i.

[21] Idem: The Yarmukian Culture, *EI*, 1, 1951, Fig. 12:10, 13, 16 (Hebrew).

[22] *J*, Pls. XXXI:14; XXX:10.

had made its appearance previously in ha-Bashan Street, Tel Aviv, and was found again later in our excavations at Tuleilat Butashi in the Sorek Valley.[23]

When we come to determine the place of the 'Wadi Rabah' phase within the general Chalcolithic context, the resemblance of the finds to those of Jericho VIII is obvious at first glance. Finds such as the bow-rim and the carinated bowls are pronounced signs of Jericho VIII. Hence the logical conclusion arises that Jericho VIII, like the related 'Wadi Rabah', is also older than Teleilat Ghassul I-IV.[24] It still remains to determine the mutual relationship between Jericho VIII and 'Wadi Rabah'. Of the three possibilities that the finds at Wadi Rabah are later, or contemporary, or earlier than the Jericho VIII finds, the first two are slight, since the burnishing still found at Jericho VIII, though on small bowls only,[25] but entirely absent at Ghassul,[26] is not restricted to small bowls at Wadi Rabah, but is common to all types of vessels; and the black burnishing (completely absent at Jericho VIII) is also common there. It may, therefore, be concluded that there was a lacuna between Neolithic Jericho IX and Chalcolithic Jericho VIII, and that part of the gap was filled by the 'Wadi Rabah' phase.

The Chalcolithic phase of 'Wadi Rabah' has since been discovered in other parts of the country.[27]

[23] Cf. *IEJ*, 5, 1955, pp. 273-274.

[24] Thus confirming Albright's conclusion of 1949 that Jericho VIII ante-dates Ghassul; cf. W. F. Albright, *AJA*, 53, 1949, pp. 213-214; idem: *The Archaeology of Palestine*. Pelican Books, 1949, pp. 65-66; *BASOR*, 114, 1949, p. 18; also G. E. Wright: An Important Correlation Between the Palestinian and Syrian Chalcolithic, *BASOR*, 122, 1951, pp. 52-55. But on this occasion a word of caution must be said on the Chalcolithic deposit at Tell el-Far'ah (Shechem), excavated by Father de Vaux (see *RB*, 54, 1947, pp. 394 ff., especially p. 398); a careful examination of the list of finds given in Fig. 1, p. 407 shows that the deposit is badly mixed: 'couche b' (the upper one) contains Yarmukian (Neolithic) pottery (cf. No. 35); while 'couche a' (the lower one) contains fragments of the 'churn' (cf. Nos. 20-21,), which is a typical Ghassulian vessel; see also Pls. XIII-XIV.

[25] *J*, p. 89.

[26] *TG* II, p. 62.

[27] Recently 'Wadi Rabah' pottery was traced by the author also at Kibbutz Hazore'a in the neighbourhood of Tell Abu Zureiq in the Jezreel Plain, and at Khirbat Sheikh 'Ali in the Jordan Valley, now excavated by M. W. Prausnitz (cf. *IEJ*, 5, 1955, p. 271), probably in the third layer.

The Siege of Lachish*

R. D. BARNETT

British Museum, London

'Now in the fourteenth year of king Hezekiah did Sennacherib king of Assyria come up against all the fenced cities of Judah, and took them. And Hezekiah king of Judah sent to the king of Assyria to LACHISH *saying, I have offended; return from me: that which thou puttest on me will I bear. And the king of Assyria appointed unto Hezekiah king of Judah three hundred talents of silver and thirty talents of gold... And the king of Assyria sent Tartan and Rabsaris and Rabshakeh from* LACHISH *to king Hezekiah with a great host against Jerusalem.'*
(2 Kings xviii, 13, 14, 17.)

Thus far the Bible. From the implicit reference to the delays which kept Sennacherib at Lachish, we infer that it was holding out against a siege, then fell. This is confirmed from the Assyrian and archaeological sources. We are not concerned here with the question of strategy which may have been followed by Sennacherib in his campaign, except to note that the Assyrians, having blocked Jerusalem, swept past to Lachish, no doubt both in order to forestall any move on the part of the Egyptians to come to Hezekiah's aid, and to intimidate the adjacent Philistine kings, on behalf of one of whom Sennacherib claimed to be intervening. Let us instead turn to the results recently published of the Wellcome Expedition to Lachish (Tell Duweir) and see what light they throw upon the battle for Lachish itself, about which singularly little seems to have been put together so far from the fragments of information now available. The work of the Wellcome Expedition, as is well known, was interrupted in 1938 by the cruel murder of its able director, Mr. J. L. Starkey; fortunately for us all, he had been able to complete the excavation of the city gateway and the city walls of the Iron Age. In Miss Tufnell's admirable Vol. III of the publication,[1] we find illustrated some objects from the actual Assyrian assault: arrowheads, scale armour, sling stones, no doubt from the

* This paper was read to the Archaeology section of the Second World Congress of Jewish Studies, held in Jerusalem in 1957.

[1] Olga Tufnell: *Lachish*, III (Text and Plates). London, 1953.

two sides—attackers and defenders—and a crest of bronze from the helmet of an attacking Assyrian. Some of the arrows, probably those of the defenders, were made of bone to supplement those of metal when supplies were running short. Olive stones found in the ruins have been taken to indicate that the battle was fought in the autumn.[2]

These objects were found in level 3 in the vicinity of the gateway bastion. In spite of some argument offered by reviewers of the publication,[3] there seems little reason to doubt that the conflagration which ended level 3, when the fortifications were cut down, marked the destruction of Lachish by Sennacherib in 700 B.C. The archaeological confirmation for this view is a little too complicated to present here, but it is hoped Miss Tufnell will go into it in the near future.

Let us, however, consider the appearance of the city and attempt to reconstruct the events of the siege, a subject to which surprisingly little attention seems to have been devoted hitherto. These events are narrated in the sculptured reliefs of Sennacherib from Nineveh in the British Museum. The city is identified on the sculpture by an Assyrian cuneiform inscription. These sculptures represent a gallant but confusing attempt by the artist, in the absence of perspective, to show several events happening at the same time which in fact succeeded one another (Pl. 30A). In order to interpret them to a modern spectator, I had a drawing made by a modern artist, Mr. Alan Sorrell (see Pl. 30B). It shows the great siege-mound, covered with logs, thrown by the Assyrians; across the valley up to the city over the siege-mound their siege machines are advancing, protected by a covering fire of arrows. This siege-mound seems to be thrown up against the gate itself, from the centre of which streams the native population in surrender. I have assumed that the small gate in the centre of the relief is not a postern gate, but a section of the main gate, to be imagined at right angles to it. It may well be asked (but never seems to have been) whether any trace of this great siege-mound was found in the course of excavation. Aerial photographs of the site taken at the beginning of the excavation show no trace of it then visible. It does, however, seem

[2] *Ibid.*, Text, pp. 55 and 119 (arrowheads); p. 55 (slingshots); p. 98 (crest and olives); and Plates Pls. 39-40. Several of these items have been generously presented by the Wellcome Trustees to the British Museum.

[3] W. F. Albright, *BASOR*, 132, 1953, p. 46; Briggs W. Buchanan, *AJA*, 58, 1954, pp. 335-339; G. E. Wright: Judean Lachish, *BA*, 18, 1955, pp. 9-17.

that a likely position for such a mound would have been at the south-western corner where, in fact, the mound rises to its highest point,[4] but the ground on the opposite side of the wadi comes closest to the walls; here an ascending road led up to the gateway bastion and here, therefore, the walls are most strongly protected by the fortified gateway. It happens that the excavators were able to trench along the whole course of the walls on this side and found, to the north of the bastion, signs of breaches hastily repaired,[5] and, near the same point, traces of a glacis of red earth rising up against the west wall of the bastion itself.[6] It may be that this red earth stratum represents all that is left of the actual siege-mound of Sennacherib after the removal or erosion of the remains. This is a hypothesis which can only be confirmed or refuted by fresh excavation. It was due to the premature abandonment of the excavation that no serious attempt could be made, or was made, even to consider such a question as the position of the siege-mound. For a siege-mound as big as this must have been, we may compare the Persian mound at Paphos in Cyprus, or the Roman one at Masada, remains of which still exist.

Let us return to the sculptures, for they tell us nearly all that we are likely to know about the fate of the city's inhabitants. The prisoners are led before the king; some wear long garments and are bare-headed (Pl. 31A); these are singled out for particular displeasure and are beheaded or flayed alive. The others, if men, wear a peculiar head-dress consisting of a scarf, the end of which hangs down. These seem to be left to go free (Pl. 31B). Why this difference of dress and of treatment? Surely the men in the long dresses with curly hair who have so incensed Sennacherib must be Hezekiah's men, the Jews who influenced the city to resist, while the men with the peculiar head-dresses are native inhabitants of Lachish. We may claim, therefore, that these are the first representations of the Judeans; the other known representation of Hebrews in antiquity, on the Black Obelisk, shows Jehu son of Omri wearing Phoenician dress, he being not a Judean but an Israelite of the North. But if we examine Sennacherib's annals we gain a clue as to what next became of the Lachishites. In the account written after this third campaign, Sennacherib describes how he carried off the people of Chaldea, the Arameans and others, into captivity and compelled them to help in the building of his palace at Nineveh. The

[4] Tufnell, *op. cit.* (above, n. 1), Plates, Pls. 106-108.
[5] *Ibid.*, Text, p. 91.
[6] *Ibid.*, Plates, Pl. 12:3, and Text, p. 93.

campaign against Palestine was his third campaign, and in the description of his fifth campaign he says: 'The people of Chaldea, the Arameans, the Manneans, (the people of) the lands of Kue and Hilakku, (of) Philistia and Tyre, who had not submitted to my yoke, I deported (from their lands), made them carry the headpad and mold bricks'.[7] The people of Lachish were evidently reckoned by the Assyrians amongst the Philistines, and other sculptures from Nineveh from the triumphal scenes in Sennacherib's palace show them, in fact, hauling the great stone bull into position along with other prisoners.[8] In another sculpture, Phoenicians can be seen at work.[9] Yet another sculpture from a different part of the palace, depicting the procession to the Ishtar Temple, shows what became of the better characters from Lachish.[10] They were enlisted into the bodyguard of Sennacherib, where they were allowed to wear their own uniform, presumably the earliest example in history of a Jewish regiment (but not of an Assyrian native levy, as there are other examples of this as early as Tiglath-Pileser) (Pl. 32B). It is strange that although these sculptures have been visible for a hundred years, the fact that the Lachish regiment is represented has only been noticed, as far as I am aware, by a soldier, the great Colonel Rawlinson, a hundred years ago at the time of their discovery, and this only in a private letter.

After Sennacherib's death a revolt took place,[11] and the palace was burnt. Traces of burning can be seen at the bottom of the siege reliefs. Doubtless the deportees rioted and perhaps destroyed the palace. Someone, perhaps a rioter, vengefully destroyed King Sennacherib's face (Pl. 32A). As he alone is mutilated in this way, one cannot help suspecting it was done by a Lachishite.

This study is an example of the many pieces of information that can be gleaned from a careful study of the Assyrian sculptures; let us hope that the subject will be given more attention in the future.

[7] D. D. Luckenbill: *Ancient Records of Assyria and Babylonia*, II. Chicago, 1927, p. 166, §383.

[8] A. H. Layard: *The Monuments of Nineveh*, II. London, 1853, Pl. 15.

[9] *Ibid.*, Pl. 14. For illustrations of Sennacherib's Phoenician campaigns, see R. D. Barnett: Phoenicia and the Ivory Trade, *Archaeology*, 9, 1956, pp. 87-97; and idem: *Catalogue of the Nimrud Ivories*. London, 1957, Fig. 53.

[10] H. R. H. Hall: *Babylonian and Assyrian Sculpture in the British Museum*. Paris, 1928, Pl. XXXVIII:1.

[11] 'From the month of Tebitu, the 20th day, till the month of Addaru, the 2nd day, there was continuous rebellion in Assyria.' (J. B. Pritchard: *Ancient Near Eastern Texts*. 2nd ed. Princeton, 1955, p. 302.)

Khirbat al-Muqanna'–Ekron
An Archaeological Survey*

J. NAVEH

THE WATER SOURCES

In the *SWP* map two springs are marked north of the tell, one of which is called 'Ain el-Mekenna'.[26] In our survey we noticed reeds in several places, north and north-west of the tell, which indicate a high water-table. We gather from information received[27] that there is plenty of water in this area, enough to have supplied a large city in ancient times: between the northern slope of the mound and the wadi, and even beyond it, as well as to the west of this line, one has only to dig a hole a few metres deep in order to strike water.[28]

In several places the water is actually gushing from the ground, and the amount provided is considerable. The Hydrological Service of the Ministry of Agriculture built a dam in the bed of Wadi al-Majanna (map-reference 1244/1324), and the water flowing from the upwellings has been measured there since September 1949: the smallest quantity measured (24 September 1953) was 7.3 litres per second, and the largest 37 litres per second (27 June 1956).[29] The fluctuations are brought about by many and various causes. One must at any rate take into consideration that the reeds and other vegetation feeding on these water sources use quite a large percentage of the water.

The high water-table and the upwellings most likely made the founders of the city prefer this site to a rocky hill in the vicinity.

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* Concluded from *IEJ*, 8, 1958, pp. 87-100.

[26] *Loc. cit.* (above, n. 2).

[27] This information was kindly supplied by Mr. D. Kornitz, a water engineer of the Hydrological Service, and by Mr. U. Pinkerfeld of Revadim.

[28] North of the rounded hill and west of the projection, there is an Arab well whose water level is very high. This well supplied the orchard north of it. Mr. Pinkerfeld recalled that in the spring of 1949 he found several waterholes in the north-west of the tell, which had been dug by the Arabs to a depth of about 1.5 m. and which contained water.

[29] These are the figures (in litres per sec.) given by Mr. Kornitz:

6 Sept. 1949—27	14 Sept. 1953—10	8 Nov. 1953—9.6	27 June 1956—37
23 March 1950—23	24 Sept. 1953—7.3	4 Jan. 1954—18	15 Aug. 1956—16
3 June 1951—18	1 Nov. 1953—8.2	20 July 1954—13	16 Jan. 1957—10

IDENTIFICATION

(see map, Fig. 1, above, p. 88)

It has already been stated above (p. 91) that this is the largest Iron Age settlement so far found in Palestine. Its very size forces us to abandon the identification with Eltekeh, which was one of the less important towns in this region. The archaeological evidence—the area of the tell and the ceramic findings—suggest that we should rather see in Kh. al-Muqanna' the most important biblical city of north-eastern Philistia—Ekron. This suggestion must now be tested in the light of literary evidence.

Many places have been suggested as the site of Ekron. Robinson and others after him[30] identified it with the Arab village of 'Aqir because of the similarity of the names. Albright maintained, however, that in the absence of corroborative pottery at 'Aqir, this suggestion cannot be upheld. He based his own identification mainly on Eusebius,[31] according to whom Accaron (Ekron) was situated between Azotus (Ashdod) and Iamnia (Jabneel) toward the east (see below, p. 170). Albright understood this to mean that 'Ekron was plainly visible to the traveler from Ashdod to Iamnia... on his right'. He decided that Qatra would be the most fitting site.[32]

However, if we consider biblical and other data from sources antedating Eusebius, we must place Ekron south-east of the 'Aqir-Qatra region, as already suggested by Beyer.[33] As a result of a careful examination of the literary sources, Mazar once suggested that Ekron should be identified with Tell Butashi in the Sorek Valley.[34] After the new survey at Kh. al-Muqanna', a re-examination of this problem seems called for.

In the description of the northern boundary of the tribal area of Judah (Joshua xv, 10-11) we read: 'And the border... went down to Beth-shemesh, and passed on to Timnah: And the border went out unto the side of Ekron (MT אל כתף עקרון) northward; and the border was drawn to Shicron, and passed along to mount Baalah, and went out unto Jabneel; and the goings out of the

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[30] E. Robinson: *Biblical Researches in Palestine*, II. 2nd ed. London, 1856, pp. 227-229; V. Guérin: *Description de la Palestine: Judée*, II. Paris, 1869, pp. 36-44; *SWP, Memoirs*, II, p. 408.

[31] *Onomasticon*, ed. Klostermann, p. 22, lines 9-10.

[32] W. F. Albright: Contributions to the Historical Geography of Palestine, *AASOR*, 2-3, 1923, p. 5.

[33] G. Beyer: Beiträge zur Territorialgeschichte von Südwestpalästina im Altertum, *ZDPV*, 54, 1931, p. 166.

[34] B. Mazar-Maisler: The Campaign of Sennacherib in Judea, *EI*, 2, 1953, p. 171 (Hebrew). In the light of the survey at Kh. al-Muqanna', Professor Mazar is ready to accept the new identification with Ekron.

border were at the sea.' Timnah cannot be looked for at Kh. Tibna—although the name might suggest this identification—since the site lacks any remains of biblical times;[35] indeed, the most suitable site for Timnah is Tell Butashi.[36] If we identify 'the side (כתף) of Ekron northward' with the hills of al-Mughar[37]—and accept the identification Ekron-Qatra—there will be an empty space of 13 km. between Timnah and 'the side of Ekron'; while on the other hand we shall have to squeeze in both Shicron and Mount Baalah between Qatra and Jabneel, although these are only about 5 km. distant from each other. But if we place Ekron at Kh. al-Muqanna', the border towns would be more or less equidistant: Beth-Shemesh to Timnah (Tell Butashi) 7 km.; Timnah to the 'side' of Ekron (the north-western hill-skirts of the Shephelah of Judah) about 5 km.; the 'side' of Ekron—Shicron (unidentified)—Mount Baalah (the hill-range of al-Mughar) about 9 km.;[38] Mount Baalah to Jabneel about 5 km. (see Fig. 1, above, p. 88). It seems, therefore, that the border line passes from Beth-Shemesh to Jabneel along the Sorek Valley.[39]

The route of Sennacherib's journey to Palestine[40] in 701 B.C. also becomes clearer if we place Ekron and not Eltekeh at Kh. al-Muqanna': Sennacherib besieged and took Beth-Dagon, Jaffa, Bene-Berak and Azor; after which he continued on his way south. In the plain of Eltekeh he fought the Egyptians, conquered Eltekeh and Timnah, and only then arrived at Ekron. Scholars who

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[35] Cf. Researches of the Circle for Historical Geography, *BIES*, 16, 3-4, 1951, p. 51 (Hebrew); Z. Kallai-Kleinmann: Notes on Eltekeh, Ekron and Timnah, *BIES*, 17, 1952, p. 64 (Hebrew). There the author points out that 'as long as Timnah has not been identified satisfactorily, the identifications of Eltekeh-Muqanna' and Ekron-Butashi are also uncertain'. Kallai has lately published an article on: The Town List of Judah, Simeon, Benjamin and Dan, *VT*, 8, 1958, pp. 134-160, in which (pp. 145-146, n. 4) he accepts the identification of Ekron with Kh. al-Muqanna' proposed here and refers favourably to the identification of Timnah with Tell Butashi (see also n. 36).

[36] This possibility was suggested by Prof. Mazar before the discovery at Kh. al-Muqanna' as an alternative to the identification with Ekron. The same possibility was put forward by Dr. Y. Aharoni, who published this view recently in his article: The Northern Boundary of Judah, *PEQ*, 90, 1958, pp. 27-31.

[37] כתף 'shoulder' as a topographical term means the side of a hill or a mountain, i.e. its slope. Compare, e.g., Num. xxxiv, 11; Joshua xv, 8; xviii, 16; Isa. xi, 14; Ezek. xxv, 9. Cf. also N. Avigad: The Second Tomb-Inscription of the Royal Steward, *IEJ*, 5, 1955, pp. 163-166.

[38] Aharoni, *op. cit.* (above, n. 36), p. 30 suggests the identification of Shicron with Tell al-Ful, which is 5.5 km. north-west of Kh. al-Muqanna' at a distance of 3.5 km. from al-Mughar. I saw Aharoni's article after my paper had gone to the press.

[39] As to the continuation 'and the goings out of the border were at the sea', it does not seem likely that the biblical writer meant the line Tell Abu Sultan (near Wadi Rubin) and Minat Rubin, but rather that the border turned seawards, i.e. westwards, from Jabneel to Tell Abu Haraza, which is rich in Middle Iron Age pottery (see Fig. 1).

[40] D. D. Luckenbill: *Ancient Records of Assyria and Babylonia*, II. Chicago, 1927, §§ 239-240.

identified Eltekeh with al-Muqanna' had to explain why Ekron was conquered after Eltekeh and Timnah by postulating an encircling movement. According to them Sennacherib left alone the capital city of Ekron, first conquering its subordinate towns, thus cutting Ekron off from the south and east.[41] Although such tactics are not impossible, Sennacherib had no need to use them: he advanced along the straight road from Jaffa south, in order to arrive at the Judean Shephelah by the shortest and easiest route. Thus his destination was the Sorek Valley. On his way from Jaffa to this valley was Eltekeh, near which occurred the clash between his army and the Egyptians. When Sennacherib reached the Sorek Valley, he took Timnah (Tell Butashi). Only then came the turn of Ekron, since—if identified with Kh. Muqanna'—it is not on the main road leading from the environs of Jaffa to the centre of Judah, but rather away from it: Kh. al-Muqanna' lies to the south of the Sorek Valley.

Another source also makes it plausible that Eltekeh lies to the north of Ekron: this is the list of the border towns of the territory of Dan, in Joshua xix, 43-45: '...and Thimnathah, and Ekron, and Eltekeh, and Gibbethon, and Baalath, and Jehud, and Bene-berak, and Gath-rimmon...'; that is, the border line goes from Tell Butashi westward to Kh. al-Muqanna', and here it turns at a right angle north toward Gibbethon (Tell Malat?)[42] and Jehud (al-Yehudiye); whereas Eltekeh lies between Gibbethon and Ekron.

The story told in 1 Sam. vi—that the cows carrying the Holy Ark took the straight way from Ekron to Beth-Shemesh—apparently contradicts the identification of al-Muqanna' with Ekron, and supports the Butashi theory. But let us check the verses: '...and send it away, that it may go. And see, *if* it goeth up by the way of his own coast to Beth-shemesh, then he hath done us this great evil: *but if not,* then we shall know that it is not his hand that smote us; it was a chance that happened to us' (*ibid.*, vv. 8-9). The cows have therefore to pass a test. If Ekron were in the Sorek Valley itself, the cows would have no choice but walk straight to Beth-Shemesh. But the road rises from Kh. al-Muqanna' north-east to where it reaches the Sorek Valley at the crossroads near the present-day railway station. From this point the cows could go on without changing direction to Gezer, or else could take the Sorek Valley road west or east. But—*'And the kine took the straight way to the way of Beth-shemesh*... and turned not aside to the right hand or to the left' (*ibid.*, v. 12)

[41] Kallai-Kleinmann, *op. cit.* (above, n. 35), p. 63.

[42] G. von Rad: Das Reich Israel und die Philister, *PJb*, 29, 1933, pp. 30-42.

from the road to Beth-Shemesh; that is, they did not choose any of the other alternatives available to them. Hence this story too may corroborate the identification of Kh. al-Muqanna' with Ekron.

In 1 Sam. xvii, 52 we are told of the flight of the Philistines after the victory of David over Goliath in the valley of Elah: 'And the men of Israel... pursued the Philistines, until thou come to the valley (MT גת; LXX: Γεθ, Gath), and to the gates of Ekron. And the wounded of the Philistines fell down by the way to Shaaraim even unto Gath and unto Ekron.' According to this description the Philistines fled from the area of the valley of Elah (Wadi Samt) between Socoh and Azekah in the direction of Shaaraim, which should be at the entrance of Wadi Samt in the direction of Wadi as-Safi.[43] On the evidence of this source, many scholars tend to identify Gath with Tell as-Safi, but other data oppose this identification.[44] In any case, the flight of the Philistines toward Ekron fits better into the picture if its site was at Kh. al-Muqanna': as soon as the fleeing Philistines reached the end of the narrow gully of Wadi Samt, they had to cross the ridge on which stands today the village of Mughallis, then reached one of the brooks of Wadi al-Manakh—Wadi al-Majanna—and this brought them to Kh. al-Muqanna'—Ekron (cf. Fig. 1, above, p. 88).

The Bible includes Ekron in the list of Philistine towns. The Philistine pentapolis turns in time to a tetrapolis: already in Amos i, 7-8, Zech. ix, 5-6, Zeph. ii, 4, and Jer. xxv, 20 Gath is no longer mentioned among the Philistine towns. Later the other inland city, Ekron, also disappears from the historical record. Esarhaddon and Ashurbanipal still mention Ekron among their vassal towns,[45] but from the end of the period of the First Temple onward there is no mention of this town for several hundred years. This is also apparent in the findings at Kh. al-Muqanna': while the remains of the Early and Middle Iron Age are plentiful, Persian pottery finds are very poor. It may, therefore, be concluded that at this time the city was deserted, and the centre of gravity in the area moved more and more towards Ashdod-Azotus and its port Azotus Paralius (Minat Isdud or Minat al-Qila').

After a long silence on Ekron, we learn from 1 Macc. x, 89 and Flavius Josephus' *Antiquities,* xiii, 102 that Alexander Balas presented Jonathan the Hasmonean with Ekron ('Ακκαρών) and its borders, as an estate, in 147 B.C. During our survey we could not find the remains of this estate or its centre

[43] Albright, *op. cit.* (above, n. 32), pp. 9-10.
[44] *Ibid.,* pp. 8-10.
[45] Luckenbill, *op. cit.* (above, n. 40), §§ 690, 876.

in Kh. al-Muqanna': here the settlement obviously came to an end during the Persian period. Neither do we know what form this estate (or toparchy) had. In any case it is not impossible that remains of the headquarters of the estate may yet be found near Kh. al-Muqanna', possibly to the west of it.

We also learn from these sources that the toparchy of Ekron was torn off Ashdod; and since Ashdod bordered on the toparchy of Gezer (1 Macc. xiv, 34), the toparchy of Ekron must be situated between the toparchies of Ashdod and Gezer.[46] The area of Kh. al-Muqanna' lies well within these borders.

Eusebius in his *Onomasticon* also points to this: λέγεται δὲ πλησίον Ἀκκαρὼν εἶναί τις κώμη Γαλλαια καλουμένη (ed. Klostermann, p. 72, ll. 6-7) '...and they say that there is a village near Accaron called Gallaia'. This Gallaia may be the village of Jilya,[47] some 1½ km. south-east of Kh. al-Muqanna'. But even if this notation refers to 'new' Accaron and not to 'ancient' Ekron, we cannot assume that both—if the above identification be correct—were any great distance from present-day Jilya.

There is no difficulty in Eusebius' direct reference to Ekron: ἥ καί ἐστι νῦν κώμη μεγίστη Ἰουδαίων Ἀκκαρὼν καλουμένη ἀνάμεσον Ἀζώτου καὶ Ἰαμνίας ἐν τοῖς ἀνατολικοῖς (*Onomasticon*, ed. Klostermann, p. 22, ll. 9-10). 'There is today a very large village of Jews[48] called Accaron, between Azotus (Ashdod) and Iamnia (Jabneel) to the east'. (Jerome translates: et usque hodie grandis vicus civium Iudaeorum, Accaron dicitur, inter Azotum et Iamniam ad orientem respiciens.) This should not be understood to mean that Accaron is visible to the traveller on the road from Azotus to Iamnia,[49] but literally: Accaron lies to the east of the line Azotus-Iamnia. It is not impossible that this 'very large village' will yet be found not far from Kh. al-Muqanna'.

The suggested identification of Kh. al-Muqanna' with Ekron has been based on archaeological findings and the examination of biblical and other sources. But it naturally raises new problems, in the first place that of the site of Hellenistic and Byzantine Accaron, and that of biblical Eltekeh.

[46] Beyer, *op. cit.* (above, n. 33), p. 170.

[47] See M. Avi-Yonah: The Map of Roman Palestine, *QDAP*, 5, 1936, p. 165.

[48] S. Klein: *Eretz Yehudah*. Tel Aviv, 1939, p. 71 (Hebrew), claims that apparently Jonathan, who received Ekron as a gift from Alexander Balas, settled Jews in this place as did John Hyrcanus in Gezer, and this was the beginning of the 'very large village of Jews' of the fourth century. The term κώμη μεγίστη—by which Eusebius refers to thirty-five settlements—is not quite clear; see Beyer, *op. cit.* (above, n. 33), p. 165, n. 2.

[49] Albright, *op. cit.* (above, n. 32), p. 5.

A New Scheme for the Sub-Division of the Iron Age in Palestine

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THE Iron Age constitutes, to all intents and purposes, one cultural entity, whose main features remain traceable through all its phases. The changes recorded below are mainly the result of inner and local developments, with a certain amount of stimulus from without.

The generally accepted scheme sub-divides the Palestinian Iron Age into two periods, Iron I (1200-925 B.C.) and Iron II (925-587 B.C.),[1] on the grounds that the division of the Solomonic Kingdom and the creation of the two monarchies formed the major turning-point in the history of the country at that period. It was indeed the beginning of individual development in each of the kingdoms. From that date onwards a gradual differentiation can be felt between the cultures, both material and spiritual, of Israel in the north and

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[1] The following table contains the other terminologies used in literature:

Iron I	= Early Iron	= Early Iron I
Iron II	= Middle Iron	= Early Iron II
Persian	= Late Iron	= Early Iron III.

In the present paper the following abbreviations have been used:

AS V = E. Grant & G. E. Wright: *Ain Shems Excavations (Palestine)*, Part V. Haverford, 1939.
Hazor I = Y. Yadin, Y. Aharoni, Ruth Amiran, Trude Dothan, I. Dunayevsky, J. Perrot: *Hazor I*. Jerusalem, 1958.
Lachish III = Olga Tufnell: *Lachish III: The Iron Age*. Oxford, 1953.
Megiddo I = R. S. Lamon & G. M. Shipton: *Megiddo I: Strata I-V*. Chicago, 1939.
Megiddo II = G. Loud: *Megiddo II: Seasons of 1935-39*. Chicago, 1948.
SS III = J. W. Crowfoot, Grace M. Crowfoot, Kathleen M. Kenyon: *Samaria-Sebaste III: The Objects*. London, 1957.
TAH = R. W. Hamilton: Excavations at Tell Abu Hawam, *QDAP*, 4, 1935, pp. 1-69.
TBM I = W. F. Albright: The Excavations of Tell Beit Mirsim I, *AASOR*, 12, 1932.
TBM III = W. F. Albright: The Excavations of Tell Beit Mirsim III, *AASOR*, 21-22, 1943.
TF(N.) = R. de Vaux: Les fouilles de Tell el-Far'ah, près Naplouse, Cinquième Campagne, *RB*, 62, 1955, pp. 513-589.
TQ = B. Maisler (Mazar): The Excavations at Tell Qasile, Preliminary Report, *IEJ*, 1, 1950-51, pp. 61-76, 125-140, 194-218.

Judah in the south. It seems to us, however, after re-examining the archaeological data, that 925 B.C. is not such a sharp turning-point as has hitherto been assumed. A much sharper point of demarcation can be observed in the middle of the 9th century, at the end of the Omrid dynasty in Israel. From the historical point of view too there is no real justification for separating the Omrid period from the one that preceded it. The two kingdoms continued to flourish and extended over approximately the same territory as in the later days of Solomon. Relations with the Phoenician coast were even strengthened during the Omrid dynasty, and Israel held its place as one of the main factors in Palestine-Syria.

In our opinion two dates in the history of the period are essential for its sub-division: the first, about 1000 B.C., marks the establishment of the United Monarchy of Israel and the decline of Philistine influence. The second date, some time in the middle of the ninth century, corresponds to the revolts of Jehu in Israel and Athaliah in Judah. At this date the first real decline in the history of the kingdoms began. All the conquered territories in Trans-Jordan were lost, and the northern state of Israel shrunk at least temporarily to its smallest dimensions. The permanent Aramean pressure endangered the existence of the kingdom, and in particular the Assyrian domination and influence began to be felt at this period. The two dates then suggest the following tripartite sub-division of the Iron Age:

Israelite[2] I	1200-1000 B.C.
Israelite II	1000- 840 B.C.
Israelite III	840- 587 B.C.

We need not dwell on the first turning-point, which is generally regarded as marking a phase within Iron Age I, on account of the great difference in pottery between the 11th and 10th centuries B.C. This difference has been well demonstrated by Albright in his levels B2 and B3 at Tell Beit Mirsim, and by Mazar (Maisler) in levels X and IX2 at Tell Qasile, but it has not been sufficiently emphasized and expressly marked in the different schemes of division of the Iron Age used hitherto.[3] We shall not repeat in detail the

[2] We suggest that the term 'Israelite Period' should be used instead of 'Iron Age', in order to avoid confusion with the terms used hitherto. It seems to us that this term is historically justified, for throughout that period (including its early part) Israel played the chief role in the country.

[3] It has, however, to be pointed out that in *Megiddo II* (p. 5) the Iron Age is divided into Early, Middle, and Late, the dividing line between Early and Middle being 1000 B.C.

well-known differences between the pottery of the first two suggested sub-periods.

On the other hand we propose to devote this study to a proof of the validity of the second turning-point suggested, for this has not been indicated in any of the current systems of sub-division.

New evidence, especially the data produced by the excavations of areas A and B at Hazor, excavated under the supervision of the present writers, permits us to cast doubt upon the usual system of taking the ninth century B.C. as one unit — as part of the first half of Israelite history. Hazor, being close to the border, was destroyed every 40-50 years on the average; every invasion of Israel is reflected in its history. The comparatively large number of historical documents mentioning Hazor makes it possible to connect some of these destructions with historical events. Thus, when we uncovered a great number of strata covering a relatively short period, we were in the fortunate position of being able to suggest accurate dates for every stratum. The strata are as follows:[4]

X, IX	950-875 B.C.
VIII	875-841
VII	841-815
VI	815-765
V	765-732
IV	end of 8th - beginning of 7th century B.C.

This chronology has now been proved by the four-piered Solomonic gate in the casemate wall of stratum X. The dates of the six strata can hardly be more than a few years out.

The six strata from Solomon to the destruction by Tiglath Pileser III fall convincingly into two well-separated groups,[5] with the crucial turning-point in the middle of the ninth century. The difference between the pottery of the two groups of strata is marked not only by the new single types which make their appearance in stratum VII, or by others which disappear with the end of stratum VIII, as will be shown immediately; the totally different character of

[4] We here take into consideration the material from the 2nd and 3rd campaigns at Hazor as well.
[5] *Hazor I*, pp. 22-23.

each group of strata is proved by considering all the elements which compose each single context. It was quite easy during the excavation to assign baskets of sherds to one or the other of the groups of strata to which they belonged. But it was difficult and sometimes impossible to distinguish the baskets belonging to various strata within each group. In the following demonstration we shall use those types which either end their existence in stratum VIII, or those which make their appearance in strata VII or VI.

We have already remarked that when we speak of a turning-point or break, we do not mean a complete revolution, and we have to keep in mind that the process dealt with here is a process of gradual, inner development. And even in the case of new types, their line of ancestry can be detected in the preceding phase, where single specimens already herald the fully-developed types to come. The quantity of specimens of any one type is also important in helping to define the character of a certain period or stratum or culture. The picture of the material from the floors of stratum VII is already preponderantly new and different from VIII.

Let us first set out the main points of difference between the pottery of our two groups of strata at Hazor.

Cooking-pots. Albright has distinguished two main types of cooking-pots, the 'shallow' and the 'deep'; he designated as a 'transitional' type the shallow type with handles and a grooved rim.[6] At Hazor, and throughout the Northern Kingdom, the deep type does not occur at all, and the type called by Albright 'transitional' is the shallow type which continues in use till the end of the Israelite period in the North. Hence it now seems justified and desirable to suggest a common terminology for both the North and the South—for Israel and for Judah. We would propose the following terms:

Early Shallow Type[7]
Late Shallow Type[8]
Deep Type.[9]

This suggestion disregards the possibility that the Late Shallow Type may typologically represent a transition between the Early Shallow Type and the

[6] *TBM I*, § 88; III, § 155.
[7] *TBM I*, Pl. 47 : 11; *Hazor I*, Pl. XLV : 18, 19, 22; XLVIII : 1-3.
[8] *TBM I*, Pl. 55 : 2, 4, 9; Pl. 56 : 1, 2; *Hazor I*, Pl. LV.
[9] *TBM I*, Pl. 55 : 3, 6, 10-12, etc.

Deep Type, for chronologically the Late Shallow Type continues to be used in the South too till the end of the Israelite period there.[10] Furthermore, there is general agreement that no sharp transition can be noticed between the two types of shallow cooking-pots; that is to say, both of them were for some time in use together.[11] At Hazor, however, the situation is quite different: the transition between the Early Shallow and the Late Shallow Type is clearly marked; it falls between strata VIII and VII. In VIII the Early Shallow is exclusively in vogue in its various forms. From stratum VII onwards the Late Shallow family only appears in all its rich variety. It does not seem possible to differentiate between the Late Shallow shapes characteristic of strata VII to IV.

Bowls. Of the various classes of bowl-types, we shall restrict ourselves to the differences found in two of them: *The carinated bowl:* in stratum VIII the ruling type is the one with a short wall from the keel upwards;[12] the type with a long wall from the keel upwards also appears, but in such cases the wall is flaring.[13] In stratum VII the short wall disappears, and the type with a long wall from the keel upwards becomes straighter and simpler.[14] This type continues in use till stratum IV. *The straight-sided flat-based bowl,* sometimes called a 'dish', makes its appearance in stratum VII,[15] and turns out to be the reigning type of bowl in strata VI and V.

Water decanter. This is one of the most characteristic types of Late Iron Age strata in this country.[16] It makes its first appearance at Hazor in stratum VII,[17] and continues throughout VI and V with no real changes. Here again we may stress the similarity, or rather the kinship, between the strata of each of the groups X-VIII and VII-IV.

Store-jars. The shouldered type, called at Megiddo 'sausage jar',[18] does not occur in Hazor VIII, but is most common in VI. Its absence in stratum VII may be a mere accident, especially if we take into consideration its abundance

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[10] *AS V*, p. 138; *TBM III*, § 155.
[11] *Megiddo I*, p. 172, § 76; *AS V*, p. 138.
[12] *Megiddo I*, Pl. 30 : 122.
[13] *Hazor I*, Pl. XLVII : 1.
[14] *Hazor I*, Pl. XLIX : 1.
[15] *Hazor I*, Pl. XLIX : 10.
[16] Cf. the forthcoming paper by Ruth Amiran on the water decanter.
[17] *Hazor I*, Pl. L : 23.
[18] *Megiddo I*, p. 167, § 43.

in Megiddo stratum IV,[19] the termination of which coincides with the termination of our stratum VII (cf. also p. 177 below).

These can be reckoned the main types illustrating the differences between the two groups of strata at Hazor. Various other types do continue throughout both periods, but show minor developments in certain details, e. g. the ovoid store-jar (called 'hippo' at Megiddo).[20] In this type the transition from the first group of strata to the second is expressed in the neck and in the rim.

Two other classes of pottery, essential to the repertoire of the Iron Age, remain to be discussed, though indeed without definite results. These are Samarian Ware and Cypro-Phoenician Ware, and in each case much more investigation and stratified excavation is required.

Samarian Ware is still a field with no definite boundaries. It is not yet clear which of the thick-ware types and which of the thin-ware types are to be included under this heading. It may, however, already be stated that the thin-ware bowls with alternating buff and red burnished bands appear to be common in both groups of strata. Differences in shape seem to exist, but the subject needs further study.

Cypro-Phoenician Ware. This ware does not provide a definitive answer either. It is clear that the ware was imported in both groups of strata. But the question arises whether the transition from Cypro-Geometric III to Cypro-Archaic I does not happen to coincide with the transition from our Israelite II to Israelite III, i. e. in the middle of the ninth century. The most prominent type of this class in Palestine is the Black-on-Red. It is certain that Black-on-Red I (III) appears in Palestine at least as early as the tenth century, and that it continues well into the ninth.[21] On the other hand Black-on-Red II (IV) occurs on various sites in the strata of the ninth and eighth centuries B. C. Its occurrences in Megiddo VA-IVB and in Tell Abu Hawam III,[22] may indeed be considered exceptional; although they led to the assumption that Black-on-Red II (IV) had also started as early as the middle of the tenth century. As

[19] *Megiddo I,* Pls. 14 : 72; 15 : 78; 16 : 81.

[20] *Megiddo I,* pp. 167-168, § 42.

[21] *TBM III,* p. 6, n. 2; G. W. Van Beek: Cypriote Chronology and the Dating of Iron I Sites in Palestine, *BASOR,* 124, 1951, p. 28; id.: The Date of Tell Abu Huwam, Stratum III, *BASOR,* 138, 1955, p. 37; *Hazor I,* p. 11.

[22] Van Beek, *BASOR,* 124, 1951, p. 28; id., *BASOR,* 138, 1955, p. 37.

for Tell Abu Hawam III — its date is still controversial and we shall suggest later on that it ends in the middle of the ninth century. Thus Tell Abu Hawam III should not be taken as evidence for the earlier appearance of this ware. On the other hand, if its single occurrence in Solomonic Megiddo (VA-IVB) is not intrusive, we shall have to admit that the two classes (B-o-R I and B-o-R II) overlap, and no light is thrown by this phenomenon on our problem. At Hazor we have so far found among the identifiable specimens B-o-R I in strata IX-VIII and B-o-R II in strata VI and V (eighth century B. C.). Consequently it seems to us that it is not impossible to assume that the transition between these two classes of pottery falls in the middle of the ninth century B. C.

We cannot, of course, expect that on every site, especially on those in the South, the same series of destructions will be found as at Hazor. We shall also see that in some excavations the ninth century B. C. is represented by one stratum, which naturally contains mixed material. It seems to us that this fact is the root of the assumption, held by many scholars, that there is no distinctive division between the two groups of types discussed above. — Let us now re-examine the main excavations with respect to this question.

Megiddo IVA is the best example of a stratum which spanned the whole length of the ninth century B.C. and ended only at its close. The attribution of its destruction to Hazael (c. 815 B.C.) seems most probable.[23] As Megiddo IVA covers both strata VIII and VII of Hazor, it is no wonder that it contains pottery types of both VIII and VII: cooking-pots of the Late Shallow Type are assigned in Megiddo to strata IV-I.[24] On the other hand, specimens belonging to the Early Shallow Type have been assigned to strata V-IV.[25] It thus becomes clear that the dividing line at Megiddo is within stratum IVA, which is in full accordance with the finds at Hazor. We have already discussed the 'sausage-like store-jar' of Megiddo IV, which clearly belongs to the end of that stratum. The water decanter also first appears at Megiddo in IV,[26] certainly to be equated with the latter part of IVA. The straight-sided flat bowl appears at Megiddo in strata IV-II,[27] and not in the range V-IV. This means that it has the same range as at Hazor — from VII onwards.

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[23] *TBM III*, p. 2, n. 1; G. E. Wright: The Discoveries at Megiddo, *BA*, 13, 1950, p. 45; B. Maisler (Mazar): The Stratification of Tell Abu Huwam on the Bay of Acre, *BASOR*, 124, 1951, p. 24.

[24] *Megiddo I*, Pl. 39.

[25] *Megiddo I*, Pl. 40 : 13, 16, 19.

[26] *Megiddo I*, Pl. 4 : 97, 99, 100, 107.

[27] *Megiddo I*, Pl. 24 : 40, 41.

Tell Abu Hawam. The crucial stratum for our present problem at Tell Abu Hawam is stratum III. Hamilton suggested, with some reserve, the date 925 B.C. as the end of that stratum.[28] Mazar proposed to lower it to 815 B.C.[29] Van Beek tried to prove that most of the types belong to Megiddo VA-IVB, thus reverting to Hamilton's date.[30] If we compare Tell Abu Hawam III with Hazor it seems that the Tell Abu Hawam material corresponds to that from Hazor X-VIII.

The bulk of the material belongs indeed to the tenth century, but there are some types which seem rather to belong to the first half of the ninth. We shall enumerate some of the latter: No. 66 (Pl. XIII) is a high-foot bowl, common at Samaria in period III (p. 147). No. 69 is a thin-ware Samarian bowl, also indicating a date not before Hazor IX, i.e. end of tenth or beginning of ninth century B.C. The cooking-pot on the left in Fig. 10 is a late variety of the Early Shallow Type, occurring in Hazor IX-VIII. Bowl No. 72 is characteristic of Hazor VIII. Painted jar No. 97 is exactly duplicated in the jars of Hazor VIII. Jug No. 80 resembles Megiddo I Jug Type 118, which has the range of strata III-II there. On the other hand, there is in Tell Abu Hawam III no material clearly comparable to Hazor VII. Consequently the date of destruction of Tell Abu Hawam III cannot be later than 840 B.C. (=end of stratum VIII at Hazor). This date makes it easy to explain the appearance of the juglet of the Black-on-Red II (IV) ware (No. 87) and the fragments of Protogeometric vases[31] in this stratum. We would therefore suggest that the end of Tell Abu Hawam III should be assigned to the middle of the ninth century B.C., and that this stratum should be considered a good representative of our sub-period Israelite II.

Samaria. When we come to examine the material from Samaria, as recently published in the new *Samaria-Sebaste III* volume, it is obvious that the main break lies between strata III and IV, which fits perfectly with the evidence from Hazor. Stratum III of Samaria is identical with Hazor VIII, and in fact Samaria III, IV, V, and VI equal Hazor VIII, VII, VI and V. The material of Samaria I and II is too scanty to be definite, but it can hardly be dated later

[28] *TAH*, pp. 67-68.
[29] *Op. cit.* (above, n. 23), pp. 21-25.
[30] *BASOR*, 138, 1955, pp. 34-38.
[31] *TAH*, p. 24, Pl. XII: 96; p. 181, Pl. LXXXVIII; V. R. d'A. Desborough: *Protogeometric Pottery*. Oxford, 1952, pp. 182 and 294.

than the 10th century B.C., or the beginning of the 9th.[32] According to Dr. Kenyon there are no examples of completely wheel-burnished vessels in these two strata.[33] Dr. Kenyon emphasizes the special burnishing technique which distinguishes her period III. It is so continuously burnished 'that in some cases it is impossible to see burnishing lines or to establish the technique' (p. 95). At Hazor this feature characterizes the bowls of stratum VIII. In the pottery the same differences demonstrated between Hazor VIII and the latter group of strata can be found between Samaria III and IV. The cooking-pot occurs in III only in the Early Shallow Type, and in IV in the Late Shallow Type (stray fragments have to be reckoned as intrusive).[34] The bowls of Samaria III are exactly identical with those of Hazor VIII. Furthermore, the use of the straight-sided flat bowl begins in Samaria IV, which again fits very well with Hazor VII. The other types discussed above in connection with Hazor (pp. 175-177) are not represented at Samaria in sufficient quantities. For instance it is not clear from the plates showing the stratified pottery, when the water decanter made its first appearance. We may, however, assume on typological grounds that this occurred in Samaria IV.

The common assumption that there is no pre-Omrid stratum at Samaria seems therefore to be untenable. On the contrary, strata I and II are to be attributed to the 10th or early 9th century B.C. They prove that a small settlement existed there at that time, but was completely razed by the great building operations of Omri and Ahab. This fact does not necessarily contradict the biblical statement in 1 Kings xvi, 24. The latter does not exclude the possibility that a small settlement existing there was bought by Omri.[35] The inner wall has most probably been correctly attributed to Omri by the excavators, but there seems to be no proof of their assumption that the pottery

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[32] I express again my gratitude to Dr. Kenyon for her kindness in showing me the material from Samaria in the collections of the Institute of Archaeology, London. (Y. A.)

[33] *SS III*, p. 94.

[34] A general methodical statement might be propounded here, i.e. that small fragments of vessels may be considered as evidence for the beginning of the appearance of that very type only, not for the termination of its occurrence, since intrusion of earlier sherds into later strata is most natural. In floors and walls earlier material is always to be expected.

[35] We owe to Prof. Mazar the suggestion that this was perhaps a family estate, owned by Shemer. 1 Chr. vii, 1 mentions Shomron (Septuagint-Lucianic version; the Masoretic text has Shimron) as one of the four main families of Issachar, together with other families, which are clearly connected with Mount Ephraim. We may suppose, therefore, that at this place existed a country estate of the Shemer-Shomron family of Issachar, which was bought by Omri.

of strata I and II is connected with the inner wall. The method used by Dr. Kenyon of correlating the pottery with the architectural remains seems to us open to objection. She explains her method *in extenso* on p. 90: 'It is therefore only the pottery of the period of construction that can safely be associated with a building, and not that of the succeeding period of occupation. All the stratified pottery comes from beneath the floors associated with the various walls.' According to Dr. Kenyon, therefore, the pottery of every stratum comes exclusively from beneath the beaten earth floors. At the same time she admits 'that the deposits making up the floor may contain objects somewhat earlier than the buildings'. It is difficult to understand why a sealed floor should contain pottery of the period of construction of that very stratum. On the contrary, it seems to us obvious that the bulk of the pottery 'from beneath the floors' belongs as a rule to the preceding stratum, and may contain some still earlier sherds; it is also obvious to us that only single sherds 'of the period of construction' should be expected. That is the reason why we maintain that pottery found *on* the floor is the most reliable indicator, belonging, of course, mainly to the end of the period of occupation of a certain stratum. Consequently it seems to us that Dr. Kenyon's correlation of the pottery and the buildings is not correct: the pottery attributed by her to a certain stratum belongs in reality to the preceding one. This is especially true in the case of her periods I-II, for most of their material comes from the filling between the walls and the courtyard. To sum up our opinion: periods I-II antedate the great building operations of Omri and Ahab, whereas the pottery of period III belongs to these buildings.

Tell el-Far'ah (N.). A comparison between the stratification of de Vaux at Tell el-Far'ah (N.) and the stratification of Hazor shows further parallels. De Vaux's 'intermédiaire', dated to the 9th century B.C., contains cooking-pots of the two classes,[36] in accordance with the finds in the 'mixed' stratum IVA of Megiddo.

Tell Qasile. Stratum VIII, which touches our problem, is dated by the excavator to the 9th century B.C.[37] As has been recognized by Mazar, the typical Iron II material (called by him 'Middle Iron Age I'), begins in this stratum. Accord-

[36] *TF(N.)*, p. 585, Fig. 19.

[37] *TQ*, pp. 67, 195-207

ing to our scheme this material would be Israelite III. It may, therefore, be asked whether Qasile VIII should not correspond to Hazor VII. Furthermore, Mazar assigns IX2 and IX1 to David and Solomon respectively. In case our assumption is correct we should perhaps date IX2 to both David and Solomon, whereas IX1 would cover the period from Shishak to the middle of the 9th century B.C. If this chronology proves correct we have again a transition in the middle of the 9th century B.C.

When we come to discuss sites in the south of the country, the difficulty of finding out the crucial dates of the 9th century B.C. becomes obvious.

Albright and Wright have worked out with exemplary thoroughness the differences between Iron I and Iron II (to use the common nomenclature). These differences are represented in part by the same pottery types that have been described above with reference to Hazor: (a) the appearance of the Late Shallow cooking-pot, called by Albright 'transitional' type, which continues till the end of the Israelite period alongside the Deep Type; (b) the appearance of the water decanter.

On the other hand, these differences are expressed in pottery types not found in the north of the country. The most prominent of these are: (a) an abundance of ring-burnished bowls; (b) hole-mouth jars; (c) ribbed-handled store-jars; (d) the late type of the black juglet.[38] The question therefore arises, when does the transition to these types occur? Albright has fixed this turning-point at 920 B.C. on the basis of an historical analysis. Practically all other excavations in this country followed his system. However, apart from historical considerations connected with the Shishak invasion (it is very doubtful whether he destroyed Tell Beit Mirsim), we cannot see at the moment any local evidence to determine an absolute date for TBM B3 and A1. It seems quite clear, however, that the whole material of TBM A contains only types corresponding to our Israelite III; the types noted above as ending with Hazor VIII do not appear in TBM A. This fact is especially clear in the cooking-pot series. We have discussed above (pp. 174 f.) the complications of naming the three main types of cooking-pots. In TBM A Albright found two types: the Late Shallow and the Deep Type. Now, in comparing this situation with Hazor, where the Early Shallow Type goes on till the middle of the 9th century, we are

[38] Mention should also be made of the high disc-based lamp, which appears somewhat later than the rest of the types.

virtually forced to assume that stratum A of TBM cannot be dated before the middle of the 9th century B.C.[39] The same date is indicated by the appearance of the water decanter in stratum A, though it is not clear whether it makes its appearance with the beginning of A1.[40] Furthermore, Albright emphasizes the abundance of ring-burnished bowls in A, which already begin to appear in B3.[41] As we have pointed out above, completely ring-burnished bowls do not occur before Hazor VIII and Samaria III. Again we are forced to believe that the end of TBM B3 is contemporary with these strata and cannot be earlier than the middle of the 9th century B.C.

The only other site in the south whose stratification has some bearing on our problem is Beth Shemesh.[42] The stratum of interest there is IIb, which was originally dated by Grant and Wright to 950-825 B.C.[43] Their analysis of the pottery shows that this stratum, like Megiddo IVA, contains earlier and later types together. Hand- as well as wheel-burnishing is common.[44] Water decanters already make their first appearance in this stratum.[45] The 'mixed' context of stratum IIb is most obvious from the discussion of the early and late types of the cooking-pot: 'In the late 10th or early 9th century this form (=our Early Shallow Type) is gradually displaced by one which has a grooved rim (=our Late Shallow Type)' (p. 138). This statement shows an accurate observation of the development of the type, but the date, if compared with Hazor, is some 50 years too high, and the transition between the two types is not gradual but rather sudden. Thus we have in Beth Shemesh IIb the same phenomenon as in Megiddo IVA, and Tell el-Far'ah (N.) 'intermédiaire',

[39] We have to keep in mind that almost all the published material belongs to A2, and that Albright himself had difficulty in indicating the types which belong to A1, and their differences from those of B3 (*TBM I*, pp. 78-79). If, therefore, it is concluded that part of the material of A1 does continue the types of B3, it may perhaps be necessary to put the beginning of stratum A somewhat higher than the dates we propose here, on the basis of the published material. If such is the case, the turning-point falls between A1 and A2. This, however, will not affect our conclusion that the main shift in the pottery types falls in the middle of the ninth century B.C.

[40] *TBM I*, § 111; *TBM* III, § 152.

[41] *TBM I*, § 117; *TBM* III, § 160.

[42] We need only mention the situation in the other important sites: Lachish: stratum IV has not yet been excavated; hence it is not yet possible to tell when IV terminated and III began. However, it seems quite probable that III ended with Sennacherib's siege in 701 B.C. Tell en Naṣbeh: no stratification. Gezer was destroyed, as generally assumed, by Shishak; therefore no material of our Israelite III is found there. As for Tell Jemmeh—the sequence of pottery types is the same as in *TBM* and *AS*, but no chronological conclusions can be deduced.

[43] *AS V*, p. 15.

[44] *AS V*, p. 136.

[45] *AS V*, p.140.

	Appr. Date	Hazor	Megiddo	Tell Abu Hawam	Samaria	Tell el-Far'ah (N.)	Tell Qasile	Beth-Shemesh	Tell Beit Mirsim	Lachish
ISRAELITE II	1000-950	—	V_B	III	I-II	III	IX_2	IIa	B_3	V?-III
	950-925	X-IX	V_A-IV_B							
	925-875						IX_1	IIb		
	875-841	VIII	IV_A		III	interm.				
ISRAELITE III	841-815	VII		—	IV		VIII	c. 795	A_1	
	815-765	VI	III	—	V	II	VII_2	—		
	765-732	V		—	VI		VII_1	IIc		
	732-721	—		—			—			
	721-700	IV	II	—	VII	I	—		A_2	II
	700-650			—			—			
	650-587	III		—			—			

—a stratum covering the whole of the ninth century B.C. and therefore containing a mixture of our Israelite II and Israelite III.[46]

To summarize the above discussion the comparative chart (p. 183) will be helpful.

Historically, the new scheme for the division of the Israelite period (Iron Age) corresponds well to the development of the period:

(a) Israelite I, 1200-1000 B.C., is the period before the establishment of the Monarchy. Its material culture is an entity amalgamating the beginnings of the Israelite pottery developed out of Canaanite traditions and Philistine elements intruding from without.

(b) Israelite II, 1000-840 B.C. This sub-period marks a high point in cultural and material activities. We may discern in this period clear Phoenician influences in pottery as well as in architecture. Its achievements do not seem to end immediately with the division of the Monarchy after the death of King Solomon, but to continue in the same line for another two or three generations, until after the reigns of Omri and Ahab in Israel and of Asa and Jehoshaphat in Judah.

We have tried to prove the extent of this sub-period in time and its cohesion from the ceramic point of view. We may reach parallel conclusions by examining its architecture and methods of building: ashlar building and elaborate capitals are found at Megiddo and Gezer[47] in the time of Solomon, and at Samaria and Hazor in the time of Ahab, without any difference. This fact lies at the root of Crowfoot's suggestion that Megiddo IVB should be assigned to Ahab instead of to Solomon.[48]

(c) Israelite III, 840-587 B.C. The last sub-period manifests in a very interesting way the increasing differentiation between the cultures of Judah and Israel, together with the increasing Assyrian influence. It is a period of standardization of material culture in both kingdoms. During this relatively long sub-period (especially in Judah) only slight changes are to be noted. It may be defined as a period of stabilization, followed by decline.

[46] The new date given by F. M. Cross & G. E. Wright (*JBL*, 75, 1956, p. 216) in the tenth century B.C. is quite improbable. Since IIb contains material of Hazor VII, it cannot end before the second half of the ninth century B.C.

[47] See Y. Yadin: Solomon's City Wall and Gate at Gezer, *IEJ*, 8, 1958, pp. 80-86.

[48] J. W. Crowfoot Megiddo—A Review, *PEQ*, 1940, pp. 132-147.

Helmet Found Near Ascalon*

G. RADAN

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ABOUT two years ago a most unusual catch was made by an Ascalon fisherman, Mr. Dov Smide. He had lowered his net to the bottom of the sea near his town, when from a depth of 28 fathoms he pulled out a strange-looking object. It was an ancient Greek helmet, which had been buried for two and a half thousand years (see Pl. 32C). The helmet was subsequently presented to the Maritime Museum in Haifa.

This discovery is by no means unique; helmets have been found under water before. There was the famous Corinthian helmet (dedicated to the Boeotian sanctuary) which was found almost half a century ago in the river Alpheios, near Olympia,[1] and another in Lake Kopais similarly dedicated (both are today in the British Museum).[2]

Determining the exact age of a helmet of this type is a rather complicated task. Documentary and material evidence for the armour of that period is considerable, and the standard of Greek metalwork was high.[3] Nevertheless, specimens actually found are relatively rare. It is a well-known fact that errors in determining the period have been made in various museums in connection with similarly well-preserved armour.[4] Such errors are bound to occur because both vase paintings and sculptures (our chief means of identification) were subject to the whims of their creators. Therefore, reality gave way to style not always contemporary with their own time. Anachronism, such as the depiction of early Greek heroes in contemporary armour, was common. Deductions based on material evidence can also go astray; in our case, for instance, the helmet was actually made in the Iron Age, but the material is bronze. It is generally agreed

* My thanks are due to Lt.-Com. A. Ben-Eli, Director of the Maritime Museum, Haifa, who first identified the helmet and made the publication of this article possible.

[1] E. Guhl & W. Koner: *The Life of the Greeks and Romans*. Transl. from the 3rd German ed. London, 1889, pp. 233-235.

[2] British Museum: *Guide to the Exhibition Illustrating Greek and Roman Life*. 3rd ed. London, 1929 (henceforward quoted as *BM*), pp. 74-75.

[3] R. A. Preston: *Men in Arms*. New York, 1956, p. 18.

[4] A. Demmin: *Die Kriegswaffen*. Leipzig, 1891, pp. 11-18; A. Jubinal: *La Armeria real, ou collection des principaux pièces de la Galeria d'Armes anciennes de Madrid*, I. Paris, 1840, pp. 25-45.

that relics of Roman imperial times reflect contemporary Greek trends, particularly in the case of armour in which the forging, hammering and moulding did not change much for several centuries. Considerable assistance is also to be gleaned from descriptions given by ancient writers, although these have to be compared carefully with specimens actually extant.

To return to our helmet — its classification is not overly difficult, up to the point of defining to which group it belongs. Care must be taken, however, in dating it, since in the design of armour—and particularly of helmets—there is a certain continuity and sometimes there have been known strange recurrences of certain types, even after a long lapse of time. The helmet is made for an unusually small head. This is particularly evident from the fact that it was fitted on the head with a lining of sponge or felt, attached by means of rows or holes along the edges.[5] At the back it is somewhat bowl-shaped (rather deeper than is usual), with a bulging crest in the centre coming over to the front and gradually ending in a sharp edge. In this type of helmet there is usually a nose-piece.[6] The ears are left free and there is an appendage to protect the neck which follows the natural contours. The beautifully shaped front has an S-shaped bulge which serves as a decoration and also holds the helmet more firmly on the head. It also separates the upper crown from the cheek-pieces.[7] On the cheek-pieces are the remains of rivets and holes. The rivets are soldered with silver (a method of soldering already known in ancient Egypt).[8] This would indicate that the helmet was richly decorated, a fact also borne out by the impressions on the cement holding the rivets in place. The plates have come away, and under-water flora have also left some mark on the surface of the helmet. The actual reconstruction must therefore be done by means of comparison. On the back of the helmet at the left-hand side there is a 7 cm.-long crack which may have been caused by the corrosion of a part which had become thin. However, in view of the evenness of the crack it would appear more likely that this was caused by some sharp object such as a battle axe or sword.

Even without technical tests it can be stated that the helmet is made of a compound of copper and tin[9] (the tin being predominant in several places)

[5] *BM*, pp. 72-73.

[6] *BM*, p. 72.

[7] Guhl & Koner, *op. cit.* (above, n. 1), pp. 233, 568: Φάλαρα or bucculae.

[8] C. Singer a.o.: *A History of Technology*, I. Oxford, 1956, p. 653.

[9] Although no analysis of the material has yet been made, it is believed (in accordance with the bronze metallurgy well established long before Hellenistic times) that it is made of the usual 7 or 9 to 1 alloy (copper and tin); see also V. G. Childe: *The Bronze Age*. Cambridge, 1930, pp. 7 and 11.

which we would call bronze or bell metal.[10] The gracefully designed helmet is of an even thickness of metal all over and is hammered from one sheet of bronze, except at the front where the pieces may have been welded on. This would call for metal evenly stretched and hammered with the actual shaping done on a stake[11] where it would be formed into a helmet or at least made concave. This work would require great skill since the formation of the concave interior border would entail a great deal of hammering and the back edges of the folded sheet would require well-stretched metal. Frequent annealing must have been required to make the hammer marks disappear. How far this actually succeeded is difficult to ascertain since, owing to the helmet's fall and the blows it received, several bumps have developed on it. It would appear that around the front part, where welding was done (the ancient way of joining parts),[12] one piece of the visor broke off owing to the sharp fold, and cracked around the edge.

The helmet bears a striking resemblance to the Attic type found in Ruvo (Apulia), where the cheek-pieces are adorned with a ram's head.[13] Generally speaking it might be considered to belong to this class of helmets.[14] This type gets its name from its use on the coins of Athens and was common in the fourth century.[15] Still it might be compared perhaps even more readily with the figures on the pediments of the Aphaia temple at Aegina, now in the Glyptothek at Munich.[16] In that group the archers, Teukros and Telamon, are wearing similar helmets.[17] The shape is the same; the difference is in the fixed cheek-pieces, the sharp edge on the front-piece, and the missing nose-piece. These characteristics would bring the helmet nearest to a type called the 'Chalcidian',

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[10] Other metal works of similar nature: Iliad, XVIII, 373-381; *ibid.*, 468-477; cf. also a relief in the Louvre representing the workshop of Hephaistos; red-figure paintings on a Greek bowl from Vulci of the fifth century B.C., and several Attic black-figure vases beginning from the sixth century B.C.

[11] Singer a.o., *op. cit.* (above, n. 8), pp. 636-639.

[12] *Ibid.*, p. 654. Pending analysis it can tentatively be stated that either silver solder was used or tin lead alloys. See also *ibid.*, II, p. 47.

[13] Juvenal, X, 134; cf. J. D. Beazley: *The Development of Attic Black-Figure*. Berkeley, 1951, p. 58: '... the scene is doubtless laid at Phthia in Thessaly ...; a ram's head adorns the checkpiece of the helmet'.

[14] A. Seyfert: *A Dictionary of Classical Antiquities*. London, 1891, p. 275.

[15] *BM*, pp. 74-75 and Fig. 66. Also Demmin, *op. cit.* (above, n. 4), p. 210, Fig. 22 bis, now in the Museum of Naples; this helmet is of a stronger construction than that from Ascalon.

[16] E. Kukahn: *Der griechische Helm*. Marburg, 1936, pp. 42-43 (s.v. Der chalkidische Helm). Cf. the helmets of a warrior (A 32, west pediment) and of a head of a warrior (Gl 90, east pediment). Gl 90 shows two ridges on the helmet, probably an early development of the type.

[17] Guhl & Koner, *op. cit.* (above, n. 1), p. 233, Fig. 262d, e. Interpreted as the type of helmet worn by Telamon and Teukros. This is, however, an outdated interpretation of these figures.

which received its name from the so-called Chalcidian jars,[18] where it occurs frequently in painted figures. These jars are found in abundance in Italy but originally came from Greece.[19]

In its original form the Ascalon helmet would represent a late sixth or early fifth century B.C. helmet, but the rich decoration, silver ornaments, rings, spirals, and wave and palmette patterns on the cement date rather from Hellenistic times.[20]

This, however, is not the last word on the subject. There is a definite clue in the extraordinary thinness of the material. The absence of fitting marks indicates that this was a helmet for special decorative use.

[18] A. Lane: *Greek Pottery*. London, 1947, p. 42. Apparently the majority were made in Euboea (560-520 B.C.), and most of the specimens found are from Magna Graecia.

[19] I am indebted to Dr. F. Willemsen, assistant of the Archaeological Seminary in Munich, who supplied me with useful data for this article and who also shares my theory. Dr. Willemsen suggested the late sixth or the beginning of the fifth century B.C. as the time of origin, on the basis of comparison with similar helmets found in the excavations of Olympia. He also suggested that the helmet might have had moulded eyebrows. This theory appears quite plausible, because the widened traces of eyebrows appear on the helmet. Concerning the original form of the Chalcidian helmet, Dr. Willemsen is of the opinion that they were probably produced on the Ionian islands.

[20] This late dating has also been suggested in a letter from D. E. Strong, Assistant Keeper, Department of Greek and Roman Antiquities, British Museum. For similar suggested decorations covering the entire surface of the helmet or a large area of it, see a tetradrachm of 190 B.C. from Ionia (L. Anson: *Numismata Graeca*. London, 1911, Part II: *War*, p. 46 and Pl. IX, 502); or the heads of Ptolemy I and II on cameos in the collections at St. Petersburg and Vienna, with rich Hellenistic decoration, and the head of Athena from a silver coin of Herakleia; or decorated helmets of various kinds worn by the statues of Athena, Ares, and heroes on various portrait heads, coins, gems, etc.

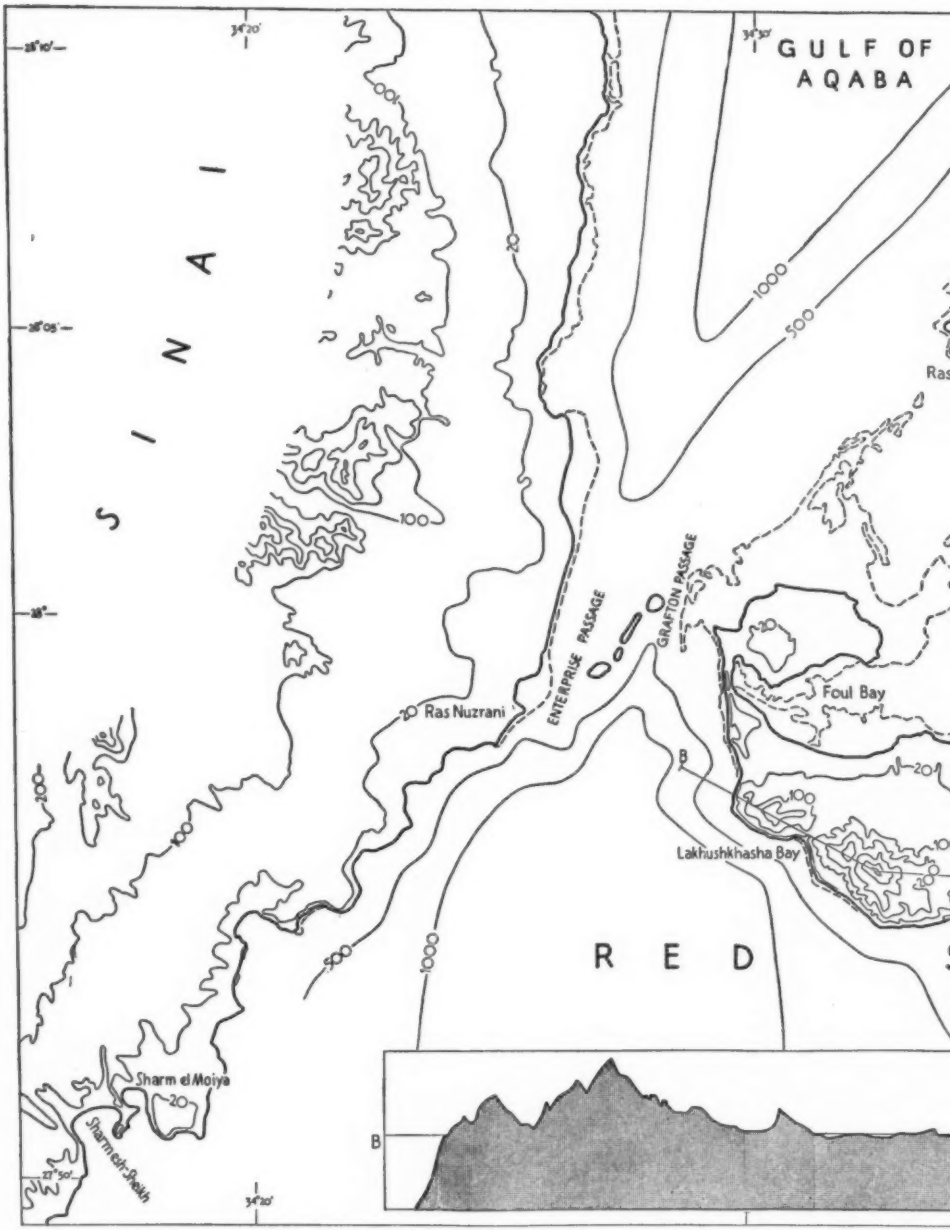

Fig. 4. The Islands of Tiran and Senafir and their immediate surroundings. Contours in metres. Broken

(Facing page 189)

n metres. Broken line indicates outer edge of reef. Vertical exaggaration in section—5 times.

Tiran: the Straits, the Island, and its Terraces*

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TIRAN AND SENAFIR

TIRAN Island measures about 11 km. north-south and 12 km. east-west (see Fig. 4); its area is 59 sq. km. Foul Bay brings the sea deep into the island, dividing it into a small northern peninsula (11 sq. km.) and a larger southern main part (48 sq. km.). The island is surrounded by an extensive area of coral reefs, with depths beneath sea-level generally so small that it might be correct to include them in the island proper, thus augmenting the total area to 94 sq. km. As most reefs belong to the northern peninsula, the two parts thus become nearly equal in area.

The highest point of the island is a little over 500 m. above sea-level. It is situated atop the steep summit of a ridge running along, and close to, the southern coast of the island. North of the ridge, on either side of Foul Bay, extends a plain which occasionally has modest relief. The 'neck' connecting the two parts of the island is a low hilly ridge. Further north the land bridge becomes so low that, at times, high water disconnects the link—to produce, as it were, two islands.

Senafir Island is smaller than Tiran, measuring only some six kilometres north-south by nine kilometres east-west, with an area of 24, or—with the adjoining reefs—of 40 sq. km. As in Tiran, the sea penetrates deep into the island. The hills on Senafir barely reach the height of 100 m. Most of it is low, more than two thirds of the area being below 20 m. Most of the higher land is in the form of two ridges, running along the northern and the south-eastern coast. Both face inland with a scarp, while the seaward slopes are more gentle (Pl. 33 A).

Both islands seem to be closely allied and have points of resemblance. Their features may be generalized as an S-shaped strip that contains all the relatively high land. This 'S' begins in the higher, western part of the northern peninsula

* Concluded from *IEJ*, 8, 1958, pp. 120-130.

of Tiran, curves to pass through the 'neck' ridge and the whole mountain range, crosses over to Senafir by way of Abu Tinoun Reef in the strait; thence it curves again to include the western hillocks of Senafir, and, recurving, passes through the two hilly ridges to terminate at the southern tip of the island. The bays and plains occupy the areas inside the curves of this 'S', while deep water adjoins their outer sides.

The mountainous ridge of Tiran (Pl. 33 B) is of great geologic and geomorphic interest.[27] Preponderantly of sedimentary origin,[28] it is mainly composed of very hard gritty sandstone, gypsum, shales, and sandy limestone, all of Neogene age, and of Pleistocene coral reef limestone. All but the last-mentioned are faulted and tilted. The whole ridge is essentially an elongated upfaulted block, delimited by major fault scarps on its northern and southern sides. The mountain ridge bears many signs of extreme youth. Slopes are very steep, in places 100 per cent and over. The supposed youth of the block is in agreement with opinions on the recent origin of the rift of the Gulf of Aqaba.[29]

MARINE TERRACES

The southern fault scarp of Tiran rises sheer from the sea, and on a good part of it we find very well preserved raised beaches composed of coral reef limestone. These are best developed on either side of Lakhushkhasha Bay.[30] The western series, west of the bay, covers the entire slope right up to the crest of the ridge. The elevations of the conspicuous terrace flats are estimated[31] to be 20, 120, 170, and 200 m., with the width of each amounting to a few dozens of metres.

[27] M. Goldberg: *The Geology of Tiran Island.* M.Sc. thesis, Department of Geology, The Hebrew University, Jerusalem, 1958 (Hebrew, unpublished). The author is greatly indebted to Mr. Goldberg for placing this and other unpublished material at his disposal.

[28] A fact already discovered more than a century ago, see Ritter, *loc. cit.* (above, n. 2); Ritter's account is essentially correct, though details are wrong.

[29] The main rift-forming movements in the area are considered to have occurred at the end of the Pliocene; S. W. Tromp: Preliminary Compilation of the Macro-Stratigraphy of Egypt, *Bulletin de la Société Royale de Géographie d'Égypte,* 24, 1951, pp. 55-105. On Shadwan Island, some 80 km. south-west of Tiran, Recent faulting that may be related to the formation of the Gulf of Aqaba had taken place; Shukri, *op. cit.* (above, n. 5).

[30] Named so on *Tiran* 1:25,000, Map 127/52, Survey of Egypt, 1955, in Arabic. For a large-scale map of the terraces, see the author's paper on Marine Terraces on Tiran Island, Northern Red Sea, to be published in *Geografiska Annaler,* 40, 1958.

[31] The elevation estimates should be regarded as very rough approximations; lack of adequate instruments in the field and the difficulty of spotting terraces on vertical air photographs prevented desirable accuracy; the given elevations are combined estimates based on field observations, surface photographs, and oblique air photographs.

Less conspicuous terraces, each only a few metres broad, are found at the intermediate elevations of 70, 100, 140, 150, and 240 m. Thus we have a western series of nine terraces at least (Pl. 34 A).

The eastern series, east of the bay, covers most of the slope up to the summit of the mountain range. Here the terraces are more uniform in extent, with flats a few metres broad in most cases. Terraces of appreciable lateral extent are at the following elevations: 20-25, 40, 60, 130, 190, 220, 250, 280, 285, 290, 320 m.—in all eleven terraces at least. The upper third of the slope is bare of terraces, but in the vicinity of the summit, at about 500 m. altitude, some forms may be interpreted as one or two terrace relics. The summit itself is built of a patch of reef limestone overlying gritty sandstone.

It cannot be doubted that the terraces signify different positions of the island relative to sea-level. The slope of the terrace flat is in all cases very moderate, almost never exceeding three per cent. In contrast, the terrace slope is very steep, with slopes not covered by debris approaching the vertical. All terraces are laterally horizontal. They cannot be ledges as the reef limestone overlies various, often strongly dipping, strata with a marked unconformity (Pl. 35 A). Also, the parallelism of the terraces among themselves as well as with the present coast line precludes any other interpretation but that of raised beaches.

The higher terraces are not as well preserved morphologically as the lower ones. This leads to the conclusion that the higher the terraces, the older they are, a conclusion substantiated by lithologic evidence: the rock of the higher terraces is more lithified and its fossils less clear. Thus the lowest, 20 m. terrace is morphologically the best-preserved, and its rock is built entirely of remains of organisms, mostly corals, indistinguishable in freshness from those strewn on the present beach. This 20 m. terrace is widespread along many shores of the island (Pl. 36 B), though not always exactly maintaining this altitude. It is most remarkable near the western coast, where one terrace flat some 30-35 m. high measures about 600 by 200 m. (Pl. 34 B). Not even rills have appeared on this relatively extensive flat, which shows that it must be very young. Actually its surface is as level as that of present-day reefs at sea-level.

REEFS

Since conditions of sea temperature and salinity are conducive to the growth of corals, most of the coasts in the Tiran region are fringed with reefs (Pl. 35 B). Off the southern coast of the island, where the offshore submarine slope is

steep, the width of the fringing reef rarely exceeds 50 m., and it is even entirely absent off some precipices. Coasts with less steep submarine offshore slopes have correspondingly broader fringing reefs, but the extensive reefs off the northern peninsula of Tiran are better classed as shoal reefs.[32] In spite of the almost constant drought, which causes wadis to be dry except on very rare occasions, the fringing reef is breached off the debouchments of most greater valleys.

Apart from being controlled by the bottom configuration, the Tiran shoal reefs seem to be considerably influenced by the direction of the wind, and therefore of the waves, to which they tend to develop a front as long and as perpendicular as possible. Long, narrow reef tongues branch off the shoal reef towards the open sea, but they are quickly compelled by the bottom topography to curve back, often rejoining the original shoal reef or merging with a similar branching-off tongue to enclose a circular basin of deeper water (Pl. 36A).

The façade of the Tiran shoal reef towards the Gulf of Aqaba is markedly straight—which is consistent with the submarine precipice indicated by the soundings. Yet the edge is notched by well-rounded and fairly deep inlets of deeper water, the outlines of which bring to mind the *sharm*[33]—a common landform on the coast of the region. Uplift with respect to sea-level of such inlets may result in the mature forms of Sharm esh-Sheikh and Sharm el Moiya (south-eastern Sinai coast), with the semi-closed coral lagoons south of Sharm Mujawwa (south-western Midian coast) and Sharm Mujawwa itself as intermediate forms. Thus the evidence from this area favours the theory of tectonic-coral origin of the *sharm*.

The reefs in the straits west and east of Tiran Island are not connected with the shoal or fringing reefs. Their well-defined edges and other features suggest scouring by currents,[34] and, in the case of Abu Tinoun Reef, probably differential growth in a direction parallel with the resultant northern current.[35] At all times the northern edges of reefs in the Tiran region were observed to be lined with silvery foam due to breakers.

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[32] Common in the Red Sea; see W. D. Nesteroff: Quelques résultats géologiques de la campagne de la 'Calypso' en Mer Rouge (1951-1952), *Deep Sea Research*, 2, 1955, pp. 274-283.

[33] A. Guilcher: *Morphologie littorale et sous-marine*. Paris, 1954, pp. 119-120.

[34] It was even thought that the bottom of the Straits of Tiran is slowly deepening under the erosion of strong currents; Crossland, *op. cit.* (above, n. 4), p. 6.

[35] Kuenen, *op. cit.* (above, n. 19), p. 444.

EUSTATIC EVALUATION[36]

Remains of ancient beaches and reefs are found in many places along the borders of the Red Sea and Gulf of Suez, often at considerable altitudes above sea-level.[37] Along the Red Sea coast, between Safaga and Qoseir, beaches and reefs have been recorded at various heights roughly estimated to be about 24, 72, 90, 114, 156, 168, 238 m. above sea-level; the lowest of them are generally very close to the sea and the higher ones stand back four to seven kilometres.[38] At the southern extremity of the Sinai Peninsula two series of coral reefs occur, a lower one at altitudes up to 25 m. and a higher one at levels ranging up to more than 200 m. above the sea. According to Ball, not all these raised beaches and coral reefs are of Pleistocene and Recent ages; the very highest of them are believed to date back to Miocene times, those at medium altitudes to the Pliocene period, and only those at levels not exceeding about 100 m. to the Pleistocene and Recent periods. This chronology is the result of an altimetric correlation with the Nile terraces, and as such has been accepted by authors of later publications.[39]

In his short summary of the problem of the Red Sea terraces, Picard[40] also expresses the opinion that the raised reefs belong in part to the Pliocene, and that their present position relative to sea-level is also attributable to Pleistocene fluctuations of the Red Sea. However, he did not find a stratigraphic division of the various coral reef zones possible, Ball's division being a temporary substitute pending further investigation.

Recently some new facts on the terraces of the Red Sea have been published by Büdel.[41] He reports numerous higher marine terraces due to eustatic changes on the west coast of the Red Sea between Suez and Jibouti,[42] but in many cases these are tilted and raised as a result of recent tectonic disturbances. The highest terrace so far recognized, which still preserves its form as a coral ledge, was

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[36] Eustatic fluctuations of sea-level may be caused by a number of factors that influence either the capacity of the ocean basins or the volume of the ocean water. The factor generally regarded as being the most important and common one is the abstraction from, or addition to, the world ocean of quantities of water accumulated in, or released by, the polar icecaps in association with climatic changes.

[37] H. von Wissmann: Übersicht über Aufbau und Oberflächengestaltung Arabiens, *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 1932, pp. 335-357; ref. on p. 341.

[38] J. Ball: *Contributions to the Geography of Egypt*. Cairo, 1938, pp. 29-30; see also *ibid.*, chapter III.

[39] Tromp, *loc. cit.* (above, n. 29).

[40] L. Picard: *Structure and Evolution of Palestine*. Jerusalem, 1943, p. 87.

[41] J. Büdel: Klima-morphologische Arbeiten in Aethiopien im Frühjahr 1953, *Erdkunde*, 8, 1954, pp. 139-156.

[42] His formula for the Qoseir terraces is: 1.5, 4, 6, 10-12, 30-40, 60, 120 m.

found by him at an altitude of 385 m. in the Danakil Desert, but he thinks it may already be of Pliocene age.

Werth[43] tries to fit various observations recorded on the terraces of the southern tip of the Sinai Peninsula into his world-wide scheme of interglacial and glacial eustatic sea-levels. However, this particular area is very unstable, as is to be expected from its location at the junction of the Suez and Aqaba rifts. Numerous earthquake cracks on the Ras Mohammed Peninsula testify to tectonic instability. Moreover, data from six localities on the south-eastern coast of Sinai show a different formula of terraces for every locality, a difference in degree of preservation in a lateral sense, and also tilting of terraces in some cases.

This synopsis appears to indicate that the terraces around the Red Sea are the joint product of tectonics and eustasy, in a proportion as yet unknown but varying from place to place.

If the Tiran terraces are compared with those of Safaga-Qoseir as reported by Ball, one obtains the altimetric correlation shown in Table 1 (p. 195).

The good correlation between the western series of Tiran and the Safaga-Qoseir series can, at this stage of knowledge, be regarded as coincidental only. A major point of difference beween the two series is their distance from the coast: the highest Tiran terraces are less than one kilometre away, while the Safaga-Qoseir terraces are four to seven kilometres from the coast.

It seems to the author that the Tiran terraces are largely a product of local factors. The two Tiran series of terraces are undoubtedly genetically related and there is no indication of a dislocation of one series with respect to the other. From Table 1 it is seen that these two series, if combined, present some 15 terrace levels compressed in a vertical range of 300 m., or one level for every 20 m. on the average. Rather than a slope with few well-defined remnants of ancient sea-level, we have a slope terraced almost uniformly in a vertical sense. It has been shown[44] that a gradually receding sea would result in just such a situation. The best interpretation seems to be that the southern coast of Tiran is a very young and active fault scarp, emerging with remnants of the fringing reef at such a high rate of uplift that erosion cannot keep pace to obliterate the terraces.

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[43] E. Werth: Die eustatischen Bewegungen des Meeresspiegels während der Eiszeit und die Bildung der Korallenriffe, *Abh. Akad. Wissensch. u. Lit. Mainz, Math.-nat. Kl.*, 1952, No. 8, pp. 481-618; ref. on pp. 537-541 and 565.

[44] A. Austin Miller: Attainable Standards of Accuracy in the Determination of Preglacial Sea Levels by Physiographic Methods, *Journal of Geomorphology*, 2, 1939, pp. 95-115.

TABLE 1
ALTITUDE OF RED SEA TERRACES
(in metres)

Tiran E-series	Tiran W-series	Safaga-Qoseir
320		
290		
285		
280		
250	240	238
220		
190	200	
	170	168
	150	156
	140	
130		
	120	114
	100	90
60	70	72
40		
20—25	20	24

Any attempt to draw more detailed conclusions on the basis of the terraces as to the evolution of the island and the sea must be, at this stage, scarcely more than a preliminary guess. One such guess is ventured here, and it is based on two tentative assumptions: (1) late Pleistocene eustatic fluctuations of sea-level have been present in the Red Sea; (2) a level of accordant summits at the elevation of 350 m. has been produced by the late Würm sea-level. The idea behind this correlation is as follows. It is evident that the mountain block of Tiran has experienced a rapid and fairly continuous uplift in the recent geologic past; conspicuous features such as the accordant summit level of 350 m. could have been formed only under conditions of more or less stable sea-level relative to the island; since the island was being absolutely uplifted, the sea-level must also have risen at that time to fulfil the condition of relative standstill; the last rise of sea-level, commensurate in amplitude and speed with the conditions described, was the one associated with the melting of the Würm icecaps. If this is correct, an average absolute rate of uplift of a few millimetres per annum must have been going on in Tiran for something like the last 150,000 years.

The complexities involved in various other possibilities are, needless to say, immense. For example, it is not even certain that pure eustatic fluctuations of sea-level have been present in the Red Sea. The depth of the sill of Bab el-Mandeb—about 100 m.—is within reach of the various estimates for Pleistocene low sea-levels. The emergence of this sill, even for a relatively short time, would have closed the Red Sea and caused its water to evaporate. Soon afterwards the sill of Tiran, in its turn, would have dried, forming an independent small lake in the Gulf of Aqaba. The probability that the gulf was then *in statu nascendi* complicates the problem still further.

However, leaving speculation aside, it seems certain that, in spite of the Tiran terraces being horizontal, they are primarily the product of tectonic processes. The eustatic factor, if present at all, seems to be of secondary importance.

SUMMARY

TIRAN Island occupies a peculiar position in the geographic pattern of the northern extremity of the Red Sea. It is located in the saddle between the mountainous mainlands of Sinai and Midian on the one hand and the deep marine depressions of the Red Sea and the Gulf of Aqaba on the other. The soundings show that the Straits of Tiran— situated west of the island—are a geomorphic connecting link between the gulf and the sea proper. Hydrographically, however, these straits are narrow enough to cause certain discrepancies not yet fully understood between the sea temperatures, salinity, and tidal range on either side of them.

The islands of Midian, of which Tiran and Senafir are the westernmost and largest, include barrier-reef islands, coastal islands, and numerous reefs of varying shapes and sizes. Tiran and Senafir are separated from the mainland of Midian by a very shallow sea, but on all other sides they are bordered by submarine precipices which most probably are young and, at least in part, active fault scarps. Tiran has a mountainous range off its southern coast up to 500 m. high. Its morphology bears the imprint of a very young upfaulted block, subjected to extremely arid erosional processes. Coral terraces elevated to 320 m. and possibly more testify to this uplift. Geomorphic considerations suggest that, at least until a comprehensive survey of terraces around the Red Sea is accomplished, the Tiran terraces are better accounted for by regional vertical movements than by eustatic fluctuations.

HEBREW BOOKS AND PAPERS

Books

Encyclopaedia Miqrait (Encyclopaedia Biblica), III. *Het to Yod*. Jerusalem: Bialik Institute, 1958. 964 cols., 20 plates, map in colour, figs.[1]

With the publication of this third volume, the encyclopaedia reaches its middle term; the fact that we have here only three letters of the Hebrew alphabet is explained by the numerous names and places beginning with *yod*, in particular the theophoric names. The present volume is, like the preceding one, edited by B. Mazar, N. H. Tur-Sinai, and S. Yeivin. It includes longer articles on the three major prophets (Ezekiel by the late M. D. U. Cassuto; Isaiah and Jeremiah by M. H. Segal). The article on Joshua has been divided between Y. Aharoni, J. Liver, and S. Yeivin, and the latter also contributes the article on Judah. Archaeology is represented by the article on seals (by N. Avigad), and by studies of such important sites as Jerusalem (by B. Mazar, who also contributes a general article on topography), Hazor (by Y. Yadin), and Jericho (by N. Avigad). Several scholars from abroad also contribute articles to this volume, for example W. F. Albright on Hamath, H. G. Güterbock on the Hittites, E. A. Speiser on the Hurrians, and J. Lewy on Habiru. The illustrations are plentiful and up to date.

A. Kindler & A. Bernheim: *Oṣar Maṭbe'ot Eretz-Yisrael* (Thesaurus of Judean Coins, from the fourth century B.C. to the third century A.D.). Jerusalem: Bialik Institute, 1958. 18 pp. introduction, map, 68 plates, 29 pp. description of coins, English summary.

This volume consists of coin photographs by A. Bernheim, most of them enlarged to several times the original size, with an introduction and descriptions of each item by A. Kindler. The series begins with two reproductions of the *Yhd* coins, and continues with the Hasmonean coinage (4 plates), the Herodian (8 plates) the First Jewish War (4 plates), Roman imperial coins illustrating Jewish history (6 plates), the War of Bar Kokhba (8 plates), municipal coinage (36 plates). Owing to the excellent photography, the enlarged size of the reproduction, and the careful selection of the specimens photographed, the details are in almost every case shown clearly, while at the same time the artistic merits of each coin can be fully appreciated. The historical introduction and the description of each coin are short and to the point.

Papers

ARCHAEOLOGY

Y. Aharoni has published the results of his survey of 'Ein Gedi (*BIES*, 22, 1958, pp. 27-45), with an additional note by J. Naveh (*ibid.*, pp. 46-48) on the Chalcolithic remains. The finds range from a large Chalcolithic building near the spring, to an Iron Age II square tower and a fort, surrounded by a polygonal wall, on top of the 'Ein Gedi pass. Roman remains include another (round) tower and fort; the Roman-Byzantine buildings near Qasr al-'Areija and on Shakarat an-

[1] For previous notices see *IEJ*, 3, 1953, p. 57, and *ibid.*, 5, 1955, p. 59.

Najjar, consist of two groups of c. 30 and 50 rooms respectively. In addition a large cave in the as-Sudeir valley was explored; it contained Iron Age I-II, Hellenistic and Roman pottery; a cistern, fed by a hidden channel, was discovered in the cave, which may have been the hiding place of King David (1 Sam. xxiv).

BIBLE-STUDIES

M. Haran (*Tarbiz*, 27, 1958, pp. 421-439) discusses the Levitical cities as Utopia and historical reality. He concludes that the extant list reflects basically a historical-geographical reality, embellished with utopian additions. The basis of reality is that at the time of composition these 48 cities contained Levitical families, but that their population was mixed. Some even contained gentile elements, the Levites being only part of their population. In the utopian imagination of P the Levitical quarters became transformed into cities exclusively Levitical.

HISTORY

A. Fuks reconstructs the history of the Jewish revolt in Egypt in A. D. 115-117 (*Zion*, 22, 1957, pp. 1-9) on the basis of papyri and literary evidence. The revolt started early in 115 in Alexandria, but was crushed by the prefect Rutilius Lupus before October of that year. Inland, however, it continued to spread, after the Jewish rebels in Egypt had been joined early in 116 by the fighters from Cyrenaica, led by Loukuas-Andreas. The rebellion thus became a 'great war', in which the Jews were ultimately defeated by M. Turbo in a campaign from Memphis southwards—not, however, without winning some signal victories.

EPIGRAPHY

B. Lifshitz publishes (*BIES*, 22, 1958, pp. 62-73) a series of epigraphical discoveries and studies. The former include a tessera found at Caesarea and inscribed Χαλικὴ ἡμμιτία; two Judeo-Greek tombstones: (1) Τώπος / Ἰσιδώρου / Θεωδώρ/ου Ἰακῶ Δω/θη Ἄζανα; (2) Μη(μ)όριον/ διαφέρο/τᾷ κύρᾳ / Σεβήρᾳ κα(ὶ) / τῶ(ν) ἀουτῆ/ς Μηκέρω/ν καὶ Εἰσ/ι(ά)ς. On another inscription from Caesarea there appears a Sidonian formula: Τ(ίτε) Φλ(άουιε) Ἱερώνυμε / χρηστὲ καὶ ἄλυπε/ χαῖρε ἐτῶν κβ'. The writer also suggests that the Elusa inscription Κασνίτις (=Κασνίταις) ἐπράθα (A. Alt: *Die griechischen Inschriften d. Pal. Tertia*, No. 54) should be interpreted as a property mark.

S. Applebaum (*ibid.*, pp. 74-77) interprets three inscriptions from Teucheira, Cyrenaica, as marking the graves of Jewish mercenaries from Huldah, Aribah, and Addidah (Huldah, Kephar Haribah and Hadid near Lod), who perhaps emigrated to Cyrenaica after being expelled from the vicinity of Modi'in.

I. Sonne (*Tarbiz*, 27, 1958, pp. 557-559) discusses an Aramaic inscription from the third century synagogue of Umm al-'Amad, published by N. Avigad (in *BIES*, 19, 1955, pp. 183-187) and suggests that the phrase 'the gate of the Lord of Heaven' (תרא [=תרעא] דמרי שומיא) stands here for 'the house of God' (cf. Gen. xxviii, 17). Consequently he believes the inscription to state that Yo'ezer the *ḥazan* and Shim'on his brother made (i. e. supervised the building of) the synagogue, and not only that they donated its door, as Avigad understood.

Barnett, R. D.: *A Catalogue of the Nimrud Ivories, with other examples of Ancient Near Eastern Ivories in the British Museum.* London: The Trustees of the British Museum, 1957. xxii + 252 pp., indices, frontispiece in colour, CXXXII plates. £8. 8*s*. 0*d*.

The nineteenth century was from many points of view a Golden Age for the Oriental Departments of European museums. Owing to the lack of interest, the crass ignorance and the corruption of the men who then ruled the Near East, practically any transportable object, dug out or found on an ancient site, could be carried away abroad. It was only towards the end of the century that the stream of oriental antiquities began to slacken, and the rise of the new nationalist regimes in the Near East has reduced it now to a mere trickle. But in the meantime vast quantities of movable antiquities of all kinds had accumulated in the storehouses of European and American museums — far more than could be dealt with promptly by their slender staffs, and, of course, far more than could be exhibited to the public. No wonder that research in these museums has now largely turned towards the treasures of the past heaped up in their magazines.

Among these collections the Western Asiatic Antiquities of the British Museum hold a leading place. It is therefore highly fortunate, both for archaeologists and historians of art, that one of the richest of these hidden treasures, the ivories found at Nimrud, has now been catalogued and discussed in a most competent manner. Dr. Barnett has devoted nearly a quarter of a century to the study of these objects. He began with the finds made by Layard in 1848; his diligence has been rewarded by the discovery of a far greater amount of almost unknown material which had been found by Loftus in 1854. At the same time the resumption of excavations at Nimrud by Mallowan provided him with a reliable check of dates and stratification, far beyond anything that could be derived from the sketchy notes of the discoverers. A series of preliminary studies in *Archaeology* (Vol. 9, 1956, pp. 87-97), *PEQ* (1939, pp. 4-19), and *A History of Technology*, I (ed. C. Singer a.o., Oxford, 1956, pp. 663-683) served as preparation for this definitive work.

Barnett's study can be divided into three main parts: (1) the catalogue, arranged by find groups, containing a detailed description of each of the 650 pieces listed, with its find spot, bibliography, and other relevant data; to this are attached 132 plates in collotype fully illustrating each object, often from several sides. One ivory is reproduced in colour as frontispiece, a method essential in this case because of the coloured inlays, but not important for the general run of ivories. It is especially noteworthy that a great many of the objects illustrated by photographs have also been drawn. In the drawings the missing parts are completed, and the area extant is clearly indicated. These drawings add a great deal to our understanding of the various designs and motifs. (2) The second part, comprising the opening chapters and a discussion at the end of the introduction (pp. 1-29 and 133-135), is concerned

with the problem of the finds and the dating of the ivories. (3) The third section concerns both historians of art and archaeologists: it is a discussion of the subjects represented in each of the main groups (the Loftus and the Layard finds), with their stylistic pecularities, derivation, symbolic meaning, and associate subjects; this study branches out into a general review of the art of the ivory sculptor, as part of the general history of ancient oriental art.

An enormous amount of work has gone into the preparation of this book, with its hundreds of descriptive notes and thousands of references. It seems to have been a long time in preparation, each part being worked upon separately; occasionally, therefore, editorial slips have occurred, as well as misprinted references (in addition to those listed in the *Corrigenda* and the additions and corrections thereto).[1]

These technical defects should not blind us, however, to the outstanding merits of Barnett's work. To begin with a basic problem too often neglected by 'desk' archaeologists: he has a thorough grasp of the technical side of his subject. The origins of the ivory material and the questions of dating are clearly set out after a thorough marshalling of the evidence. As regards the dating, the Loftus group is assigned to the years 824-703 B.C., and the Hamath group to the reign of Iaubidi in the last quarter of the eighth century B.C. The author makes further valuable contributions to the problem of the relative influence of wood or metal engravers' techniques on the ivory carvers (pp. 43, 158), the origin of the pyxis from sections of ivory tusks (pp. 63-64), the use of bowls as stoppers (p. 91), and the reasons for the use of palmettes on handles to strengthen them and to hide their joints (p. 57).

The bibliographical references are very full and up to date. The author's learning is encyclopaedic, and his quotations range from the Talmud and Jewish ritual to the rules of the Haji Bektash dervishes and Picasso (pp. 79, 108, 145). Readers of this *Journal* will naturally be interested in his treatment of the biblical subjects upon which he touches. Such are his identification of Ophir with India (pp. 59-60), and his very reasonable rejection of the view that the ivories in Ahab's 'ivory house' at Samaria were used to cover walls — they are obviously furniture inlays (pp. 59, 124). He is very skilful in weaving together biblical and non-biblical evidence, as in the case of the connection between Noah's rainbow and the multicoloured necklace of Utnapishtim, his Mesopotamian counterpart (p. 106). On some points his suggestions might be enlarged; e.g. while rightly

[1] The discussion of the *cherubim* on p. 86 is repeated on p. 141, down to the identical references: Fig. 32 is discussed on p. 95, while Figs. 33-34 are dealt with earlier in the book; Fig. 49 on p. 140 does not seem to be discussed at all on this page or anywhere near it. The various loci mentioned in the Nimrud palace are not shown on the plan. The misprints include: p. 35 — CXXXII should read CXXII; p. 66 (Fig. 20) — S 17 should read S 27; p. 74 — the figure references in the text are mixed up: the correct reference is 22a — Beni Hasan, 21b Carchemish; p. 119 — reference is made to a Fig. 18g, but there is no sublettering in this figure; p. 131 — Fig. 58 should read 48; p. 167 — Fig. 71 should read 90; p. 177 (C 48) — reference to Fig. 19 should be deleted.

pointing out the sacral character of the earrings, as indicated by the name *qudašu*, he does not refer to the interesting fact that the golden calf was fashioned by Aaron out of this kind of material (Exod. xxxii, 2). A few of the author's opinions lend themselves to criticism: his assumption, for example, that the tabernacle was more likely to have been influenced by pagan art than Solomon's temple (p. 85)—the contrary is much more probable, if we consider the Canaanite and Phoenician influences to which Solomon had been exposed. And why are the 'crescents' of the Midianites' camels (Judges viii, 21) assumed to have pointed downwards? On methodological grounds one might also doubt the relevance of quoting the frescoes of the Dura-Europos synagogue in support of a biblical theme (p. 91, n. 10) or Malalas on the cherubs (p. 86, n. 9). Even the Talmudic sages seem to have had very vague ideas on the character of an *Ashera* tree, and their views are hardly worth quoting (pp. 139-140).

In his discussion of the multitude of motifs adorning the ivory reliefs, Barnett greatly enriches our understanding on many points of interpretation, significance, and derivation. We may note his pertinent remarks on the Sumerian origins of the roaring lion (p. 39), the 'insulating' cones below the lion's feet supporting the thrones of the gods and kings (p. 116), the discussion of the various types of Egyptian, Asiatic and mixed sphinxes (p. 84), the slung rosette (p. 93), the lotus and bud chain (p. 100), the relations between the Egyptian *djed* and the Mesopotamian palm tree (p. 87), the Mitannian origin of the griffon (p. 55), the Mycenaean origin of the hillock of scales (p. 58), the history of the tasselled helmet (p. 65), and other details too numerous to mention. In the sphere of religion and symbolism one would single out his treatment of the sacred cow (pp. 142-145), and the 'woman in the window' (p. 145), also the identifications of Qadeš-Astarte-Anath (p. 82), and of Horus and Moth (p. 98). His symbolic interpretation of the lion hunt as a solar myth (pp. 71-72) seems, however, to go beyond the available evidence.

Barnett's most valuable contribution in this book is undoubtedly to the history of art. In setting out the origins and development of the ivory decorations, he has naturally been forced to go very far back and to make some very sweeping statements. On some occasions, such as in his suggestion that the ivories made at Hamath for an Edomite ruler were snatched away to Assyria before delivery, he seems to go rather beyond the bounds of probability (p. 49). But on the whole his treatment of the exceedingly rich and complex texture of Eastern Mediterranean art in the Bronze and Iron Ages is masterly. He disentangles with extraordinary skill the warp and woof of Hurrian, Hittite, Syrian, Egyptian, and Phoenician art. His treatment of the latter deserves all praise, in view of the generally slighting attitude taken up by art historians towards it (for example in Frankfort's *Art and Architecture of the Ancient Orient*). Barnett fully understands the limitations of the Phoenician commercial artist, working for a 'live' market (unlike the tomb decorators of Egypt), and especially for feminine customers. He stresses the skilful combination in the

Phoenician book of patterns of North Syrian and Mesopotamian elements of composition with Egyptian forms and figures; in this combination he sees the essentials of Phoenician art. Its contribution to the general development of decorative art was the adaptation of the forms of Egyptian deities to the religious ideas and artistic principles of Hither Asia and their subsequent transmission to Greece. We should be quite wrong in believing that this syncretism, evidenced by the combination of several motifs into groups, is in itself a sign of decadence, as assumed by some scholars.

The art of the ivory sculptor was technically restricted to the fashioning of small objects; but on the other hand it gained wide diffusion by the easy transport of its products, whether by merchants as wares or by conquerors as loot. Such ivories appear in several places far apart, but they are easily connected and classified by their strongly marked artistic peculiarities. They therefore serve as a kind of 'tracer' for the various trends of oriental art, which can by their means be followed through time and space, throughout the cultures of the ancient Near East. These facts, and Barnett's scholarly treatment of them, make the study of his book a valuable experience, not only for students of the ancient Orient, but for anyone working in the many fields of the history of art, where the radiations of oriental art are to be felt rather than clearly seen.

M. AVI-YONAH

Farmer, W. R.: *Maccabees, Zealots and Josephus. An Enquiry into Jewish Nationalism in the Greco-Roman Period*. New York: Columbia University Press, 1956. xiv +239 pp., bibliography, index. $4.50.

Prof. Farmer's book centres round an idea, which he obligingly sets out for the benefit of the reader in the first lines of his preface, viz. that there was a positive relationship between the Maccabees and the Zealots, notwithstanding Josephus' assertion to the contrary. After stating the problem in the first part of his work, he analyses the evidence under three heads. He attempts to show that Jewish 'nationalism', centred round the Torah, was common in Maccabean and later times; that it regarded the Temple as its main symbol; and that the Maccabees were remembered and consequently emulated in the later period. An additional chapter is devoted to tracing the zealotic element in the Dead Sea Scroll of the 'War of the Sons of Light and the Sons of Darkness'; and a concluding part enlarges the study into an enquiry into the status of Jesus within the framework of his period, as outlined in the preceding chapters.

Farmer has made a thorough study of his sources and of the principal modern historians dealing with his period, although he seems to have restricted his reading to authors in European languages. He sets himself the laudable aim of trying to understand the period dealt with in its own terms, and not in those of the twentieth century (whether a historian is able to achieve such objectivity, pulling himself from his period as it were by his own hair, is another matter). His analysis of Josephus' ambivalent approach to the Maccabees and the Zealots is convincing, although he does not perhaps

give sufficient weight to the fact that in recounting the history of Judah Maccabeus and his brethren, Josephus was following the First Book of Maccabees and cannot, therefore, be regarded as an absolutely independent source. The thesis in itself is superficially plausible; obviously there must be much in common in two revolutionary movements breaking out among the same people, in the same country, and under somewhat similar circumstances; Mommsen called the Zealots ironically 'the new Maccabees', a title they would not have spurned.

But to quote Farmer's words: 'Resemblance however striking does not demonstrate conclusively identity between the inner character of historical movements' (p. 85). We shall have to take a closer look at things.

Our first point of criticism is a semantic one. The author's identification of Jewish nationalism with 'zeal for the Torah' is a misuse of the term 'nationalism'; and this nomocratic slant is felt throughout the book. As a consequence Jewish 'nationalism' is supposed to have subsided under the high-priestly Hasmoneans—shades of Alexander Jannai! The obvious rift after the nomination of the High Priest Alcimus between the Hassidim and the Maccabeans is in itself evidence enough that the revolutionary movement comprised two groups, one religious and one nationalistic in the usual sense. The 'liberty' gained by Judah (*Ant.*, XII, 433-434) can be interpreted both ways.

In order to establish his thesis, the author is forced to play down the religious oppression of Antiochus IV, and to equate it with the state of the Jewish nation under the Romans. However, if we look objectively at the two periods *(pace* the author's injunction to look at the past with the eyes of the past, p. 92), we must note that in 167 B.C. the Temple was desecrated, and such basic acts of Jewish religion as circumcision or teaching the law were punished as crimes; whereas in A.D. 66 the Temple was standing, sacrifices were daily offered by a legitimate High Priest, and the exercise of religion was lawful; and this according to the Mishnah, if we are to disregard the special pleading of Josephus. To say that the Seleucids only *threatened* the destruction of the Temple (p. 91), referring to the times of Nicanor, i.e. *after* the restoration of the worship, while disregarding the previous acts of Antiochus IV, is historically inadmissible. The same is true of the burning of the Torah in Hellenistic and Roman times; in the one case it was the act of an irresponsible individual and punished as such; in the other an official act of religious persecution. The favourable attitude of the Seleucids to Jewish religion is indeed indicated in the sources; but these refer either to the times of Antiochus III before the persecution or to later days, when defeats in battle had taught the Greek rulers religious tolerance. The occasional violations of the Temple by Pompey or Crassus or the threats of violation under Caligula can by no means be put on a level with the systematic desecration of the 'abomination of desolation'. To quote as examples of the Roman attitude to the Temple its destruction in A.D. 70 after four years of revolt, or the still later erection of a Roman temple on its ruins after the revolt of Bar-Kokhba (p. 91, n. 19) is to

go beyond the latitude normally allowed to historical special pleading.

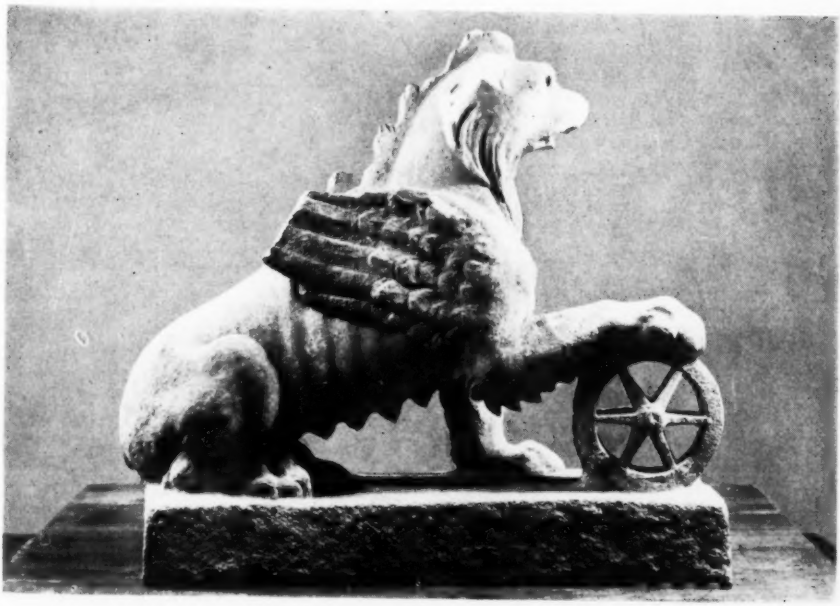
Obviously there must have been a deep difference in origin between the Maccabean movement, which was aimed at restoring the legitimate worship sanctioned in the charter of Antiochus III, and the revolt of A. D. 66. Farmer is on the right track when, in a later part of his book, he stresses the apocalyptic (we would prefer 'eschatological') element in the spiritual ferment of the times. Contrary to what is known of the Maccabees, the Zealots clearly felt that the Kingdom of God was nearing, and that it was their bounden duty to hasten its coming by throwing off the yoke of the Gentiles. It was this Messianic element that constituted the hidden *spiritus movens* of the First and Second Wars against Rome. These were true revolutionary movements, in comparison with which the Maccabees were conservatives. The two movements were thus essentially different, although both have an honoured place in Jewish history. The Maccabean revolt ensured the survival of the Jewish nation as a people; the Zealots, who felt the approaching end of the ancient world, cut the nation off by a bloody surgical operation from the dying body of the Greco-Roman civilization.

Apart from the general thesis, there are various points of detail on which one might venture to differ from the author. Thus he seems to accept as genuine historical expressions of mind such literary-rhetorical exercises as the last sayings of the 'Seven Martyrs', of Razi, and even the last speech of Eleazar son of Yair at Masada. Again, he seems to regard the historical period from Antiochus to Titus as 'best illuminated of all periods' (p. 48), forgetting the obscurity which veils the period from 135 B. C. to the generation before Josephus, if one excepts the Herodian period. On p. 38, n. 27 he describes the identity of Antigonus and Mattathias as a 'conjecture'—although there are few facts so well established by two faces of the same coin. On p. 72 Metilius, the commander (ἔπαρχος) of the Roman garrison in the palace, probably a centurion, is called a 'general'. P. 76, n. 79 assumes that the postponement of the attack on Jerusalem was due to the Romans' awaiting the opportunity of a sabbatical year—a daring conjecture, seeing that in those years Vespasian was occupied in securing the imperial throne. The statement (p. 188) that the High Priest was appointed at the pleasure of Caesar is far fetched; actually the appointment was vested in the Herodian dynasty, although it is true that they would not dare to appoint a *persona non grata* to the Roman goverment.

The chapter on the Dead Sea Scrolls is connected but slightly with the main theme; and it is very strange that the author calls the sect (p. 160) a 'tightly organized community of highly religious Jewish *patriots*'. To what 'patria' did they owe allegiance, apart from their own group?

M. Avi-Yonah

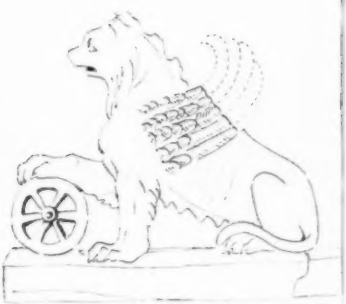
A: Vue montrant l'inscription sur le socle.



B: Vue de côté. Hauteur totale 50 cm.

A: Le griffon de la frise du Musée du Latran.

B: L'inscription grescque sur le socle.



C: Restauration des ailes selon le griffon
Musée du Latran.

A: Le sphinx panthée du Musée du Caire.

B: Le sphinx panthée du Musée de Bruxelles.

A: Le plat d'argent de la tombe à Ballana, montrant le griffon posant la patte sur le globe.

B: L'intaille de Dor avec la gryps néme
que sur la colonne. 10 fois agrandi (h
teur originale environ 1 cm.).
(Photo M. Abram

A

B

C

A-C: Sphinge androcéphale et la roue némésiaque sur les monnaies frappées à Alexandrie sous les premiers Antonins.

D: Sphinx surmonté du disque solaire.

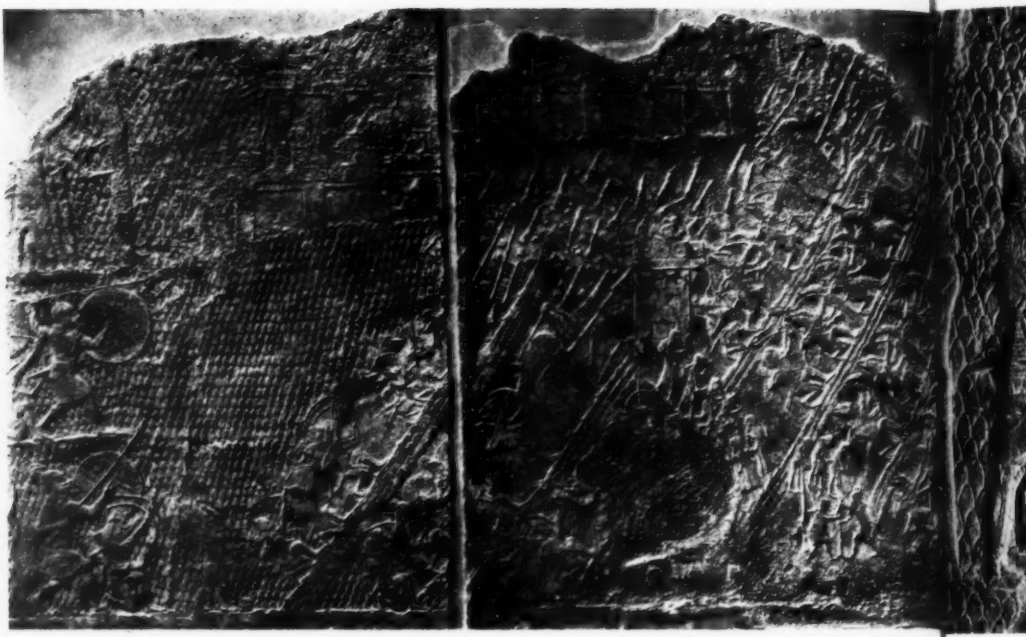
E: Sphinx panthée.

F: Sphinx panthée avec la gryps némésiaque.

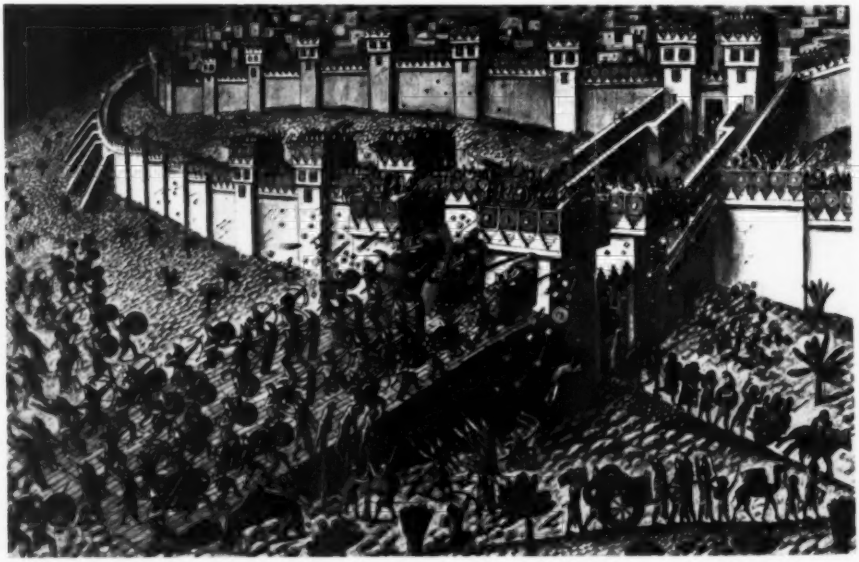
LE GRIFFON D'EREZ

G: Rectangular room (B).

H: Room (B) with wall (C) in the foreground.



A: Detail of relief depicting the siege of Lachish (British Museum).



B: The siege of Lachish. *(Drawn by A. Sorrell)*

A: Prisoners led before King Sennacherib.

B: Exiles from Lachish.

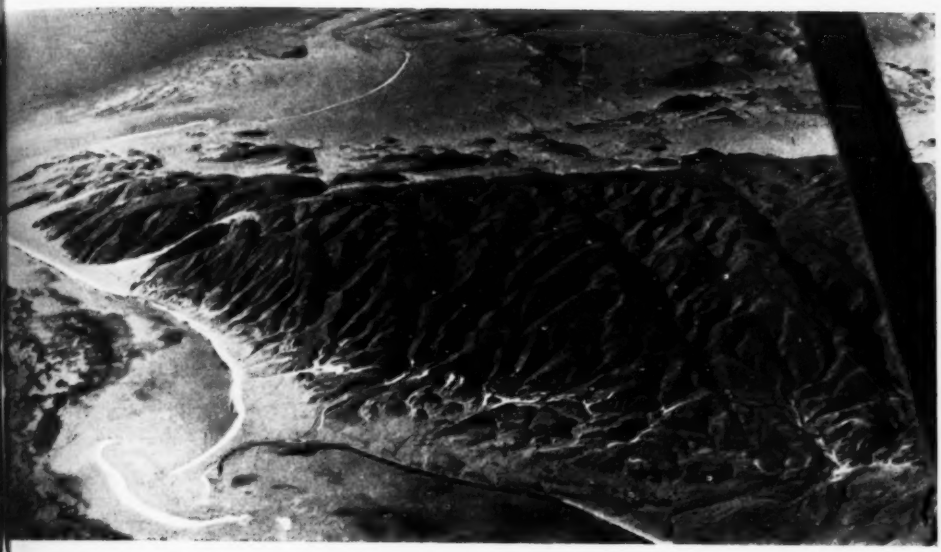
A: King Sennacherib defaced on Nineveh relief.

B: Jewish soldiers presumably enlisted in Assyrian army

THE SIEGE OF LACHIS

C: Side view of the helmet.
Original height c. 20 cm.

HELMET FOUND NEAR ASCALO



A: Senafir Island: the ridge off the south-eastern coast.

B: The mountain ridge of Tiran, looking NW. Steeply dipping grit strata in the foreground. The Sinai Peninsula in the background, beyond the Straits of Tiran.

A: Lakhushkhasha Bay and the western series of the Tiran terraces.

B: The large terrace flat south of the 'neck' that connects the northern peninsula with Tiran Island proper. The terrace is built of coral limestone. The

B: The frin

A: A mesa-

A: A mesa-like terrace off the western coast of Tiran. Thin but hard caprock of coral limestone overlies dipping layers of shale and gypsum.

B: The fringing reef off the south-eastern coast of Sinai. View northwards from over Ras Nuzrani. The white line of foam indicates the outer edge of the reef.

B: The large terrace flat south of the 'neck' that connects the northern peninsula with Tiran Island proper. The terrace is built of coral limestone. The

A: The shoal reef of Tiran, looking NE. The northern peninsula is on the right. Ras Fartak is in the backgrou

B: The 20 m. terrace on the southern coast of Tiran.